Daniels Corporation

TRANSPORTATION IMPACT STUDY

PROPOSED MIXED-USE DEVELOPMENT

DUNDAS & SIXTH LINE

TOWN OF OAKVILLE

December 2024

24030

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December 18, 2024 **Reference Number:** 24030

Sumeet Ahluwalia
Development Manager
Daniels Corporation

Dear Mr. Ahluwalia:

RE: Transportation Impact Study
Proposed Mixed-Use Development
Dundas Street West & Sixth Line, Oakville, Ontario

LEA Consulting Ltd. is pleased to present the findings of our Transportation Impact Study for the proposed mixed-use development located at the northwest corner of Dundas Street West and Sixth Line in the Town of Oakville. This study has been prepared in support of the Zoning By-law Amendment (ZBA) application for the subject site. This report concludes that the traffic associated with the proposed development will have an acceptable impact on the surrounding road network.

Please do not hesitate to contact the undersigned should you have any additional questions or concerns at RKeel@lea.ca.

Yours truly,

LEA CONSULTING LTD.

Robert Keel, M.Sc.Pl., MCIP, RPP
Manager, Transportation Planning

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Encl. Transportation Impact Study – Proposed Mixed-Use Development, Dundas & Sixth, Town of Oakville

DISCLAIMER

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EXECUTIVE SUMMARY

LEA Consulting Ltd. (LEA) has been retained by Daniels Corporation to undertake a Transportation Impact Study (TIS) in support of the rezoning application for the proposed mixed-use development located at 3000 Sixth Line & 21 Dundas Street West in the Town of Oakville.

The development will be built out in four phases. Phase 1 will consist of a retail block with a gross floor area (GFA) of 1,394 m^2. Phase 2 will include two mid-rise residential buildings with a total of 328 units, and two townhouse blocks with 17 units. Phase 3 will include a high-rise residential building with 140 units and 406 m^2 of at-grade retail, as well as two townhouse blocks with 11 units. Phase 4 will replace the retail block constructed as part of Phase 1. At full buildout, the proposed development will contain 665 apartment units, 28 townhouse units and 406 m^2 of retail gross floor area.

An intersection capacity and queueing analysis was undertaken for the surrounding road network under three horizons: 2028 (Phase 1-3 completion), 2033 (Phase 4 completion), and 2038 (5 years post build-out). All intersections and movements are expected to operate within capacity under existing and future conditions for all horizons. It can therefore be concluded that the proposed development will have an acceptable impact on the surrounding road network.

The proposed vehicle parking supply meets the requirements of North Oakville Zoning By-law 2009-189. At full buildout, a total of 791 parking spaces will be provided. 200 bicycle parking will also be provided in accordance with the by-law requirements.

Transportation Demand Management (TDM) strategies have also been recommended for the proposed development to support the existing multi-modal transportation options available in the study area. TDM recommendations include bike parking, bicycle repair stations, information packages, pre-loaded PRESTO cards, pick-up/drop-off facilities and unbundled parking.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

1 INTRODUCTION

LEA Consulting Ltd. (LEA) has been retained by Daniels Corporation to undertake a Transportation Impact Study (TIS) in support of the rezoning application for the proposed mixed-use development located at 3000 Sixth Line & 21 Dundas Street West in the Town of Oakville (herein referred to as the "subject site").

The site location is shown in **Figure 1-1**.

Figure 1-1: Subject Site (Source: Google Earth, accessed December 2024)

The subject site is currently vacant and is zoned as Dundas Urban Core (i.e. mixed-use) and Future Development. The Oakville Official Plan designates the site as within the Dundas Street Urban Core Area. The surrounding area is primarily low-rise residential.

1.1 DEVELOPMENT PROPOSAL

The proposed development will be constructed in four phases:

- Phase 1: retail block with surface parking;
- Phase 2: two 8-storey residential buildings with shared underground parking, two 3-storey townhouse blocks;
- Phase 3: 9-storey residential building with underground parking; and

- Phase 4: removal of the Phase 1 retail block, 8-storey residential building with at-grade retail and underground parking, and two 3-storey townhouse blocks.

For the purpose of the analysis, it is assumed that Phase 1-3 will be constructed by 2028, and that Phase 4 will be completed by 2033.

The residential site statistics are presented in **Table 1-1**.

Table 1-1: Proposed Development – Residential Statistics

Phase	Building	Unit Breakdown				
		Studio	1-Bed	2-Bed	Townhouse	Total
Phase 2	Building A	15	112	49	-	176
	Building B	22	100	30	-	152
	Townhouse 1	-	-	-	9	9
	Townhouse 2	-	-	-	8	8
	Total	37	212	79	17	345
Phase 3	Building C	24	124	49	-	197
Interim Condition	**Phases 1 + 2**	**61**	**336**	**128**	**17**	**542**
Phase 4	Building D	14	91	35	-	140
	Townhouse 3	-	-	-	4	4
	Townhouse 4	-	-	-	7	7
	Total	14	91	35	11	151
Ultimate Condition	**All Phases**	**75**	**427**	**163**	**28**	**693**

Phase 1 will consist of a retail block with a gross floor area (GFA) of 1,394 m^2. This block will be removed when the ultimate Phase 4 condition is built out. The ultimate Phase 4 condition is Building D which will also have at-grade retail fronting Sixth Avenue, with a proposed gross floor area of 406 m^2.

The interim and ultimate site plan are illustrated in **Figure 1-2** and **Figure 1-3** respectively.

Figure 1-2: Interim Site Plan (Kirkor Architects, December 2024)

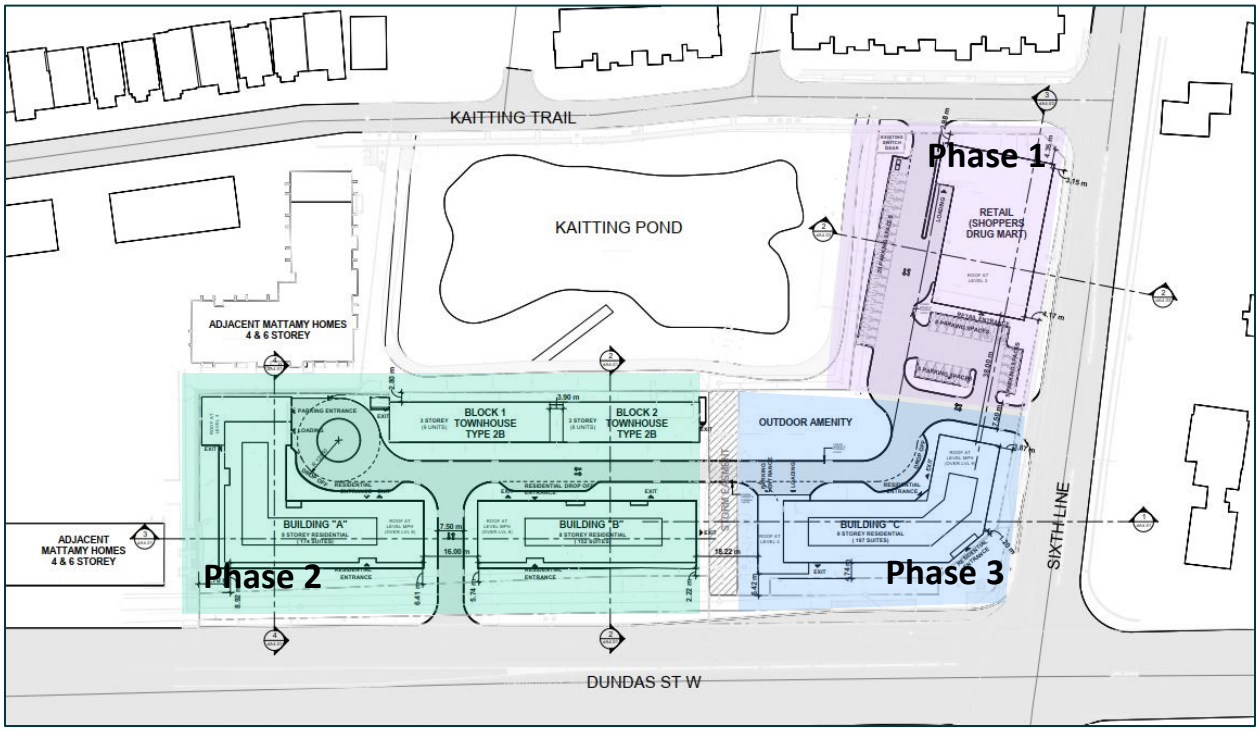
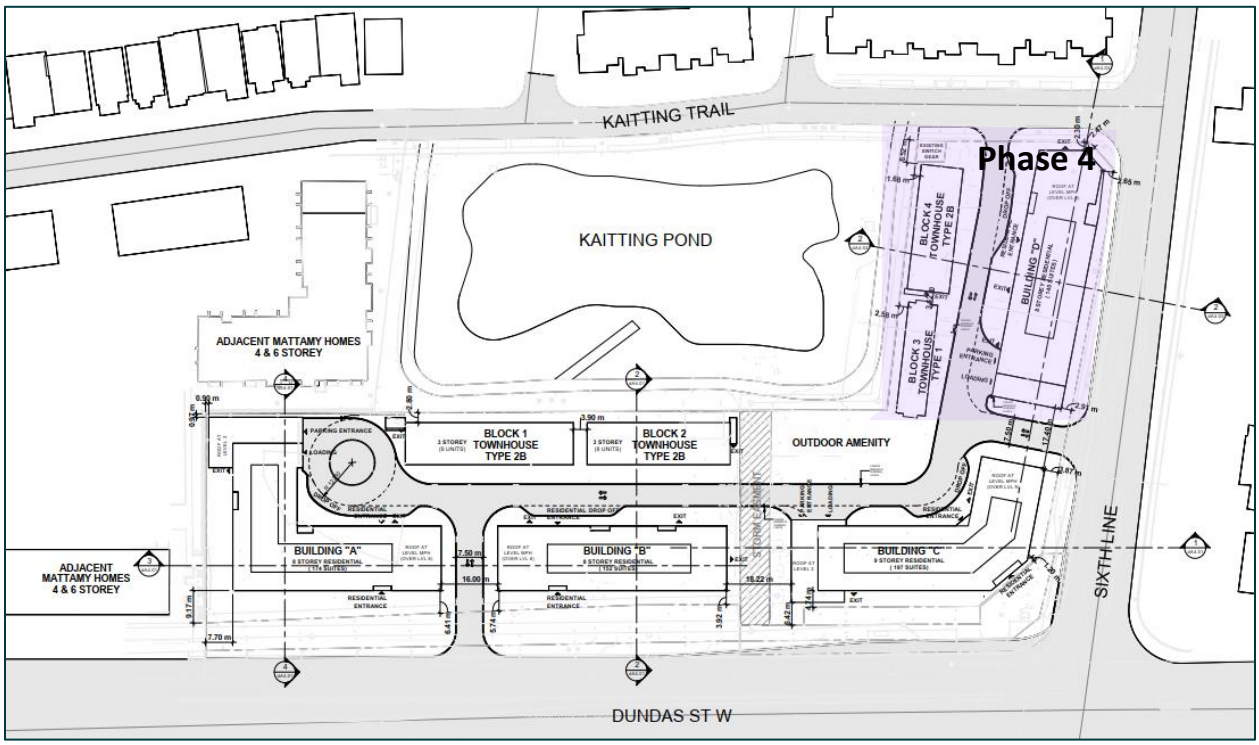


Figure 1-3: Ultimate Site Plan (Kirkor Architects, December 2024)



The proposed development will have three vehicular access points to the local road network. Unsignalized full-moves driveways will provide access from both Sixth Line and Kaitting Trail. An additional unsignalized right-in-right-out (RIRO) driveway will provide access from Dundas Street West.

In the ultimate conditions, a total of 791 parking spaces will be provided underground. The Phase 1 retail block will have 39 surface parking spaces which will ultimately be removed as part of the construction of Phase 4. The Phase 2 buildings will share a connected parking garage containing 318 residential parking spaces and 108 visitor parking spaces. Phase 3 will also have a parking garage with 158 residential parking spaces. The ultimate condition of Phase 4 will have an underground parking garage with 163 residential parking spaces and 44 parking spaces to be shared between visitors and retail. A full review of the applicable vehicle parking requirements and proposed supply is provided in **Section 6**.

Bike storage rooms will be provided to ensure secure, convenient access to active travel modes for residents. The Phase 2 garage will provide 130 bicycle parking spaces in the bike rooms, with 38 additional bike parking spaces at-grade. Secure long-term bicycle parking rooms will be located within the underground parking garages, with 130 bicycle parking spaces provided in Phase 2 (Buildings A & B) and 70 spaces provided in Phase 3 (Building C).

One loading space will be provided per phase, to be shared among the buildings in each phase of the development.

Pick-up/drop-off areas will also be provided in front of each apartment building.

1.2 SCOPE OF WORK

This TIS has been prepared in accordance with the following guidelines:

- Halton Region's Transportation Impact Study Guidelines (2015);

- Halton Region's Access Management Guidelines (2015); and
- Halton Region Access By-law 32-17.

The scope of work has been determined through consultation with Town of Oakville and Region of Halton staff. The TIS terms of reference and response from City and Region staff are provided in **Appendix A**.

2 EXISTING TRAFFIC CONDITIONS

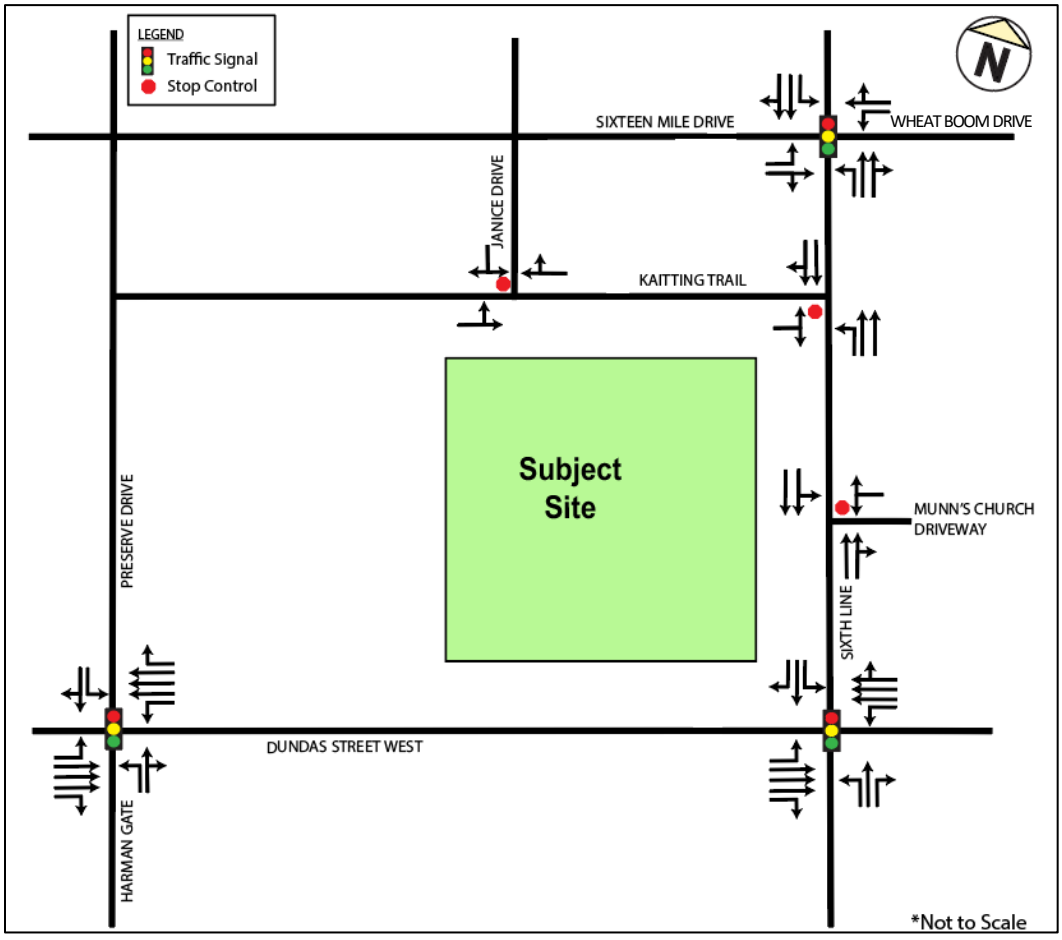
This section summarizes the existing transportation conditions in the study area, including the road, transit, cycling, and pedestrian networks. The study area was determined by assessing the size of the proposed development and its anticipated transportation impact, and through discussions with Town of Oakville and Region of Halton staff. A supporting terms of reference is provided in **Appendix A**. The study area includes the following existing intersections:

- Dundas Street West and Preserve Drive / Harman Gate (Signalized);
- Dundas Street West and Sixth Line (Signalized);
- Sixth Line and Munn's United Church Site Access (Unsignalized);
- Sixth Line and Kaitting Trail (Unsignalized);
- Sixth Line and Sixteen Mile Drive / Wheat Boom Drive (Signalized); and
- Kaitting Trail and Janice Drive (Unsignalized).

2.1 ROAD NETWORK

The following section provides a description and classification of roadways within the study area. **Figure 2-1** illustrates the existing lane configuration and traffic control at intersections.

Figure 2-1: Existing Lane Configuration and Traffic Control



Dundas Street West is an east-west major arterial road within the study area. Dundas Street West operates with a six-lane cross section (i.e. three lanes per direction). The street has a posted speed limit of 70 km/h. There are multi-use trails on both sides of Dundas Street West for pedestrians and cyclists.

Sixth Line is a north-south minor arterial road within the study area. Sixth Line operates with a four-lane cross section (i.e. two lanes per direction) with sidewalks and bike lanes on both sides. The street has a posted speed limit of 60 km/h. Parking is not permitted on Sixth Line within the vicinity of the subject site.

Kaitting Trail is an east-west minor collector road within the study area. Kaitting Trail operates with a two-lane cross section (i.e. one lane per direction) with sidewalks on both sides. The street has a posted speed limit of 40 km/h. Parking is permitted on the south side of Kaitting Trail to the west of Isaac Avenue.

Sixteen Mile Drive is an east-west minor collector road within the study area. Sixteen Mile Drive operates with a four-lane cross section (i.e. two lanes per direction). The posted speed limit is 40 km/h. Parking is permitted on the north side only to the west of Colton Way and on the south side only to the east of Colton Way. Sidewalks are provided on both sides of the street. The street is also a marked bicycle route.

Wheat Boom Drive is an east-west minor collector road within the study area. Wheat Boom Drive operates with a two-lane cross section (i.e. one lane per direction) with sidewalks on both sides. The street is also a marked bicycle route. The street has a posted speed limit of 40 km/h.

Harman Gate is a north-south major collector road within the study area. Harman Gate operates with a two-lane cross section (i.e. one lane per direction). The street has a posted speed limit of 40 km/h. Harman Gate has sidewalks and bike lanes on both sides of the street. Limited on-street parking is permitted in marked locations.

Preserve Drive is a north-south minor collector road within the study area. Preserve Drive operates with a two-lane cross section (i.e. one lane per direction) with sidewalks on both sides. The street has a posted speed limit of 40 km/h. Parking is permitted on both sides of Preserve Drive.

Janice Drive is a north-south local road within the study area. Janice Drive operates with a two-lane cross section (i.e. one lane per direction) with sidewalks on both sides. The street has a posted speed limit of 40 km/h. Parking is permitted on the east side of the street.

The Town of Oakville permits on-street parking on all Town streets for a maximum of 3-hours unless otherwise specified. For streets south of Dundas Street, parking is not permitted between 2am and 6am from November 15 to April 15, whereas for streets north of Dundas Street, parking is not permitted between 2am and 6am throughout the year.

2.2 TRANSIT NETWORK

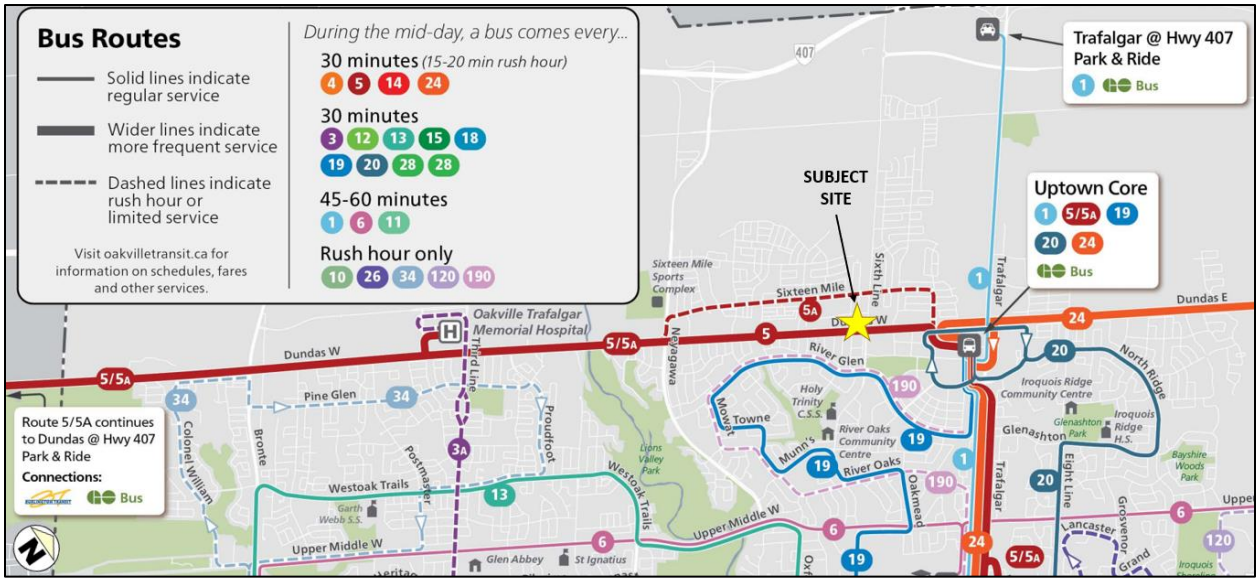
The Oakville Official Plan designates Dundas Street as a Regional Transit Priority Corridor. Currently, Oakville Transit operates local bus service along Dundas Street, however in the long-term Metrolinx has proposed the Dundas Bus Rapid Transit (BRT) line which will operate along Dundas Street between Hamilton and Toronto (see **Section 3.1.2**).

The Official Plan has also identified a regional transit node around Dundas Street West and Trafalgar Road, approximately 750m east of the subject site.

The subject site is served by Oakville Transit which provides local bus service throughout the Town. There are a number of bus options available in the study area which connect the subject site to a variety of destinations including the Uptown Core, hospitals and colleges.

The transit routes currently servicing the immediate and surrounding area are illustrated in **Figure 2-2**. The site receives a TransitScore of 48/100, or "Some Transit", when entered into the WalkScore™ application, indicating that there are a few nearby public transit options that can accommodate travel to and from the subject site.

Figure 2-2: Existing Transit Network (Source: Oakville Transit, accessed September 2024)



Oakville Transit Route 5/5A Dundas is a bus route operating along Dundas Street and Trafalgar Road between Dundas & Highway 407 Park & Ride in the west and Oakville GO in the east. The route has stops at key destinations throughout the Town, including Oakville Trafalgar Memorial Hospital, the Uptown Core, Sheridon College (Trafalgar Road Campus) and Oakville Place. The 5A branch operates along Sixteen Mile Drive and Wheat Boom Drive instead of Dundas Street West between Neyagawa Boulevard and Ernest Applebee Boulevard during peak periods only. Route 5 operates with a headway of 15 minutes during weekday peak periods, and every 30 minutes off-peak and on weekends.

> *Access Locations*: Oakville Transit Route 5 is accessible in the study area at the Dundas Street West and Sixth Line intersection, adjacent to the subject site. Oakville Transit Route 5A is accessible on Sixteen Mile Drive at either Sixth Line, Larry Crescent, or Colton Way, which are 300m or a 4-minute walk from the subject site.

Oakville Transit Route 19 River Oaks is a bus route operating between the Uptown Core (Trafalgar Rd / Dundas St W) in the north and Oakville GO (Trafalgar Rd / Spears Rd) in the south. The 19 route travels primarily through neighbourhoods on local roads. On weekdays, this route operates with 30-minute headways on weekdays, and with 60-minute headways on weekdays after 8pm and on weekends.

> *Access Locations*: Oakville Transit Route 19 is accessible in the study area at the Sixth Line and River Glen Boulevard intersection, which is 600m or an 8-minute walk from the subject site.

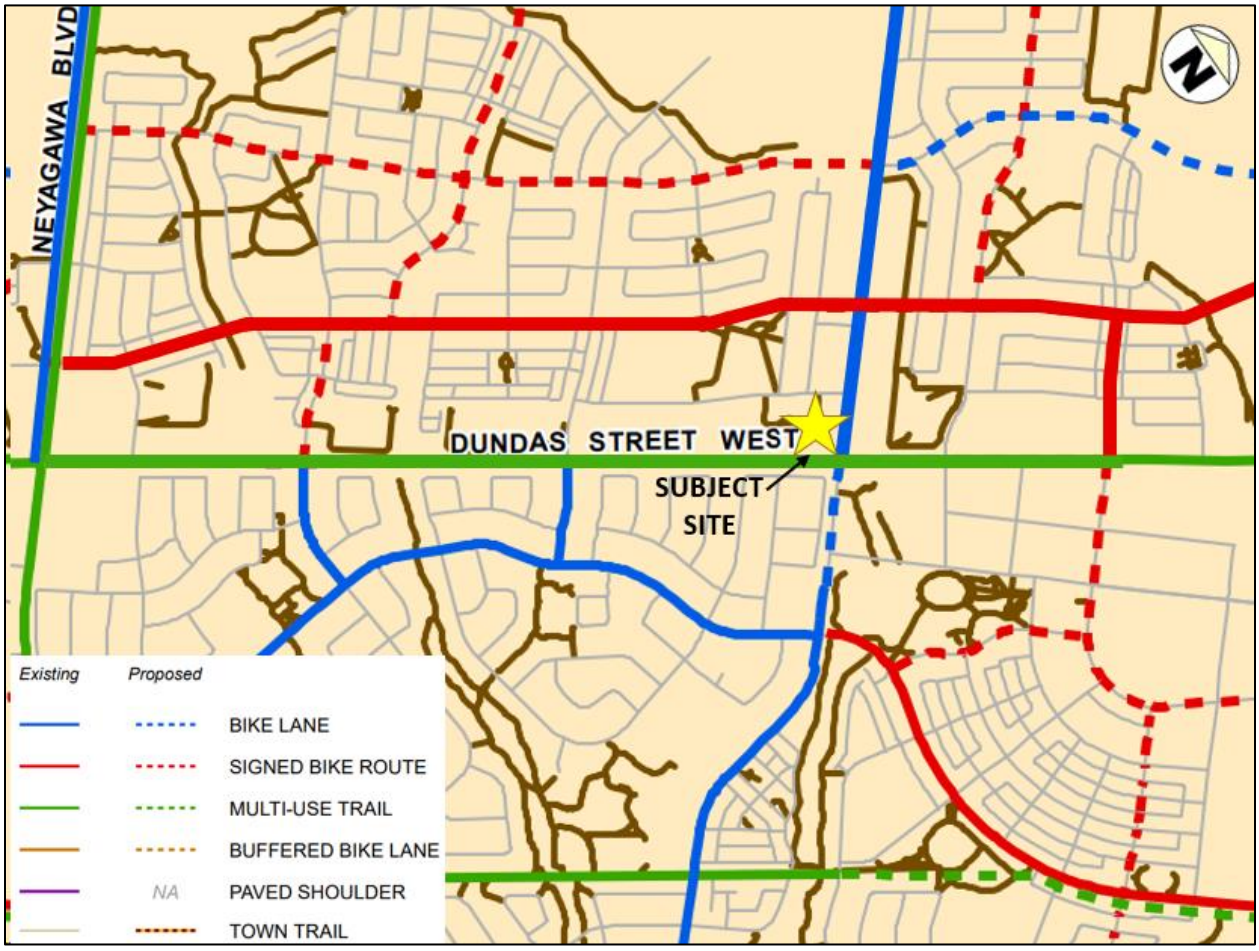
Oakville Transit Route 190 River Oaks Express is a limited-service bus route operating between the Uptown Core (Trafalgar Rd / Glenashton Dr) in the north and Oakville GO (Trafalgar Rd / Spears Rd) in the south. The service operates on weekdays only, with three trips in the morning peak period and three trips in the evening peak period, all with a headway of 30 minutes.

> *Access Locations*: Oakville Transit Route 190 is accessible in the study area at the Sixth Line and River Glen Boulevard intersection, which is 600m or an 8-minute walk from the subject site.

2.3 CYCLING NETWORK

The subject site is located near several cycling facilities including bike lanes on Sixth Line and Harman Gate, multi-use trails on Dundas Street West, and signed bike routes on Sixteen Mile Drive and Wheat Boom Drive. In addition, there are several trails and parks within biking distance. The site receives a BikeScore of 60/100 - "Bikeable", when entered into the WalkScore™ application. The existing cycling network surrounding the subject site is illustrated in **Figure 2-3**.

Figure 2-3: Existing Cycling Network (Source: Town of Oakville Official Plan, Aug 2021)



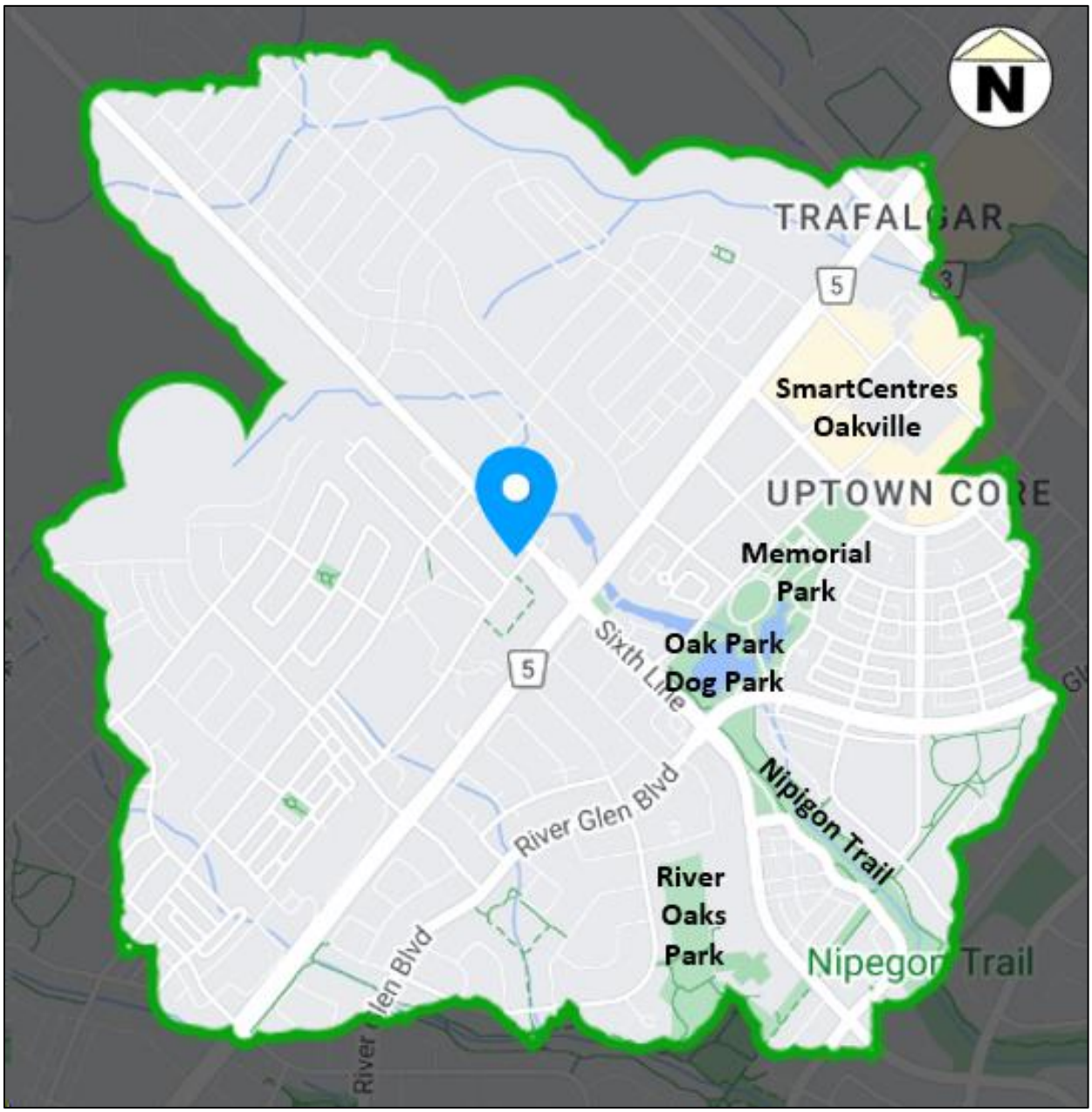
2.4 PEDESTRIAN NETWORK

When entering the site address into the WalkScore™ website, the subject site receives a WalkScore of 13/100, or "Car-Dependent". However, the study area is very walkable when it comes to recreational walking, with continuous sidewalks available on both sides of each street in the study area, and several walking trails available nearby.

Within a 5-minute walk from the site, there is an elementary school to the northwest, several parks nearby, and a church and daycare immediately east of the site. Within a 10-minute walk, a pedestrian can reach a small commercial plaza, Memorial Park and the Oak Park Dog Park.

As shown in **Figure 2-4**, a 20-minute walk from the subject site could permit an individual to reach the Oakville SmartCentres plaza which offers a variety of shops and services.

Figure 2-4: 20 Minute Walking Distance from Site (Source: WalkScore™, accessed December 2024)



2.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data in the intersection capacity analysis. A summary of the TMC data collected is outlined in **Table 2-1**. Counts were conducted by LEA for all study area intersections in November 2023 after completion of the Sixth Line widening project. Signal timing plans were provided by the Town of Oakville and confirmed through on-site observation. Supporting details are provided in **Appendix B.**

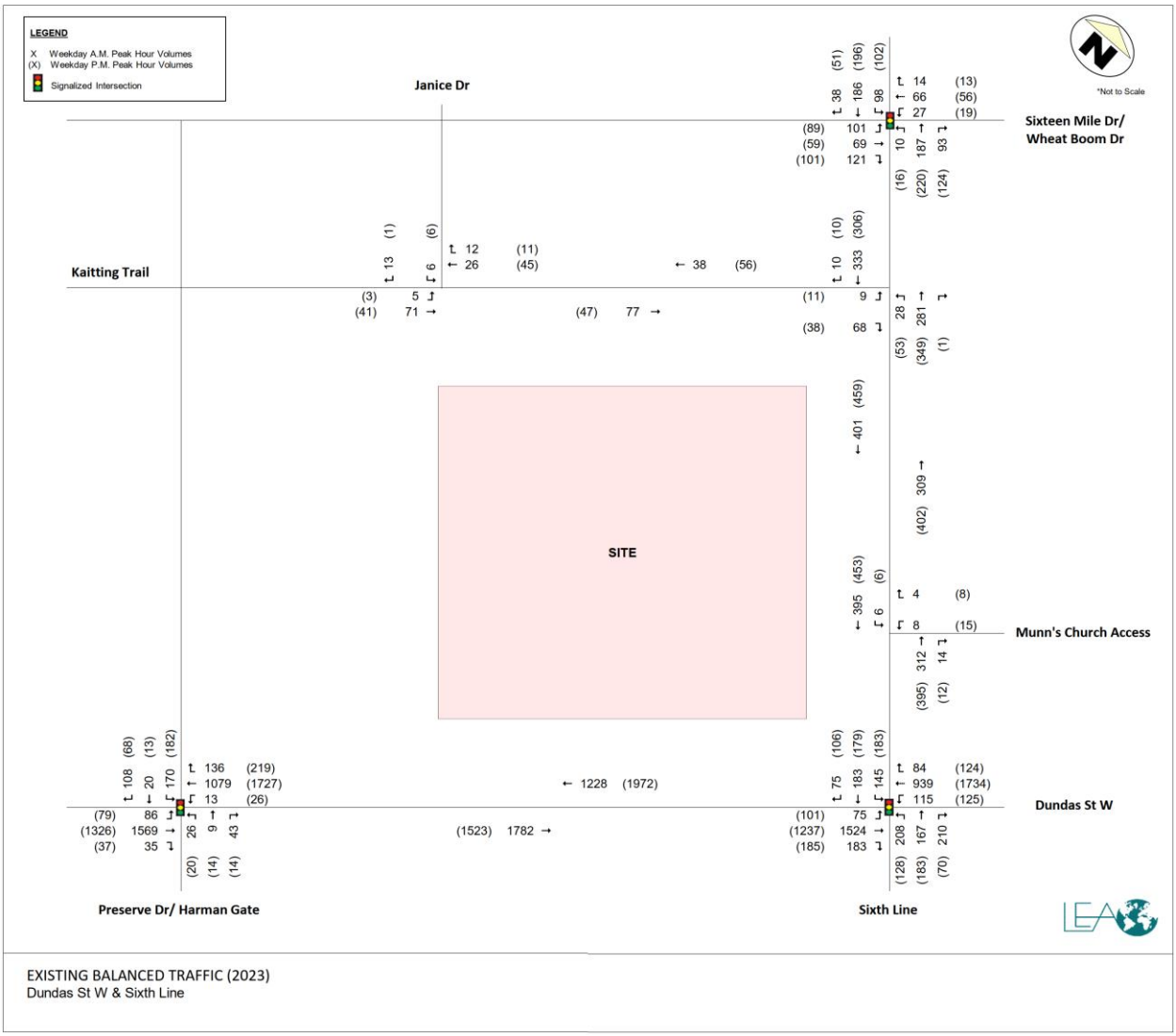
Table 2-1: Data Collection Summary

Intersection	TMC Date	Source
Preserve Dr & Dundas St W	Wednesday, November 22, 2023	LEA Consulting
Dundas St W & Sixth Line		
Munn's Church Access & Sixth Line		
Kaitting Trail & Sixth Line		
Sixteen Mile Dr & Sixth Line		
Janice Dr & Kaitting Trail		

2.6 EXISTING TRAFFIC VOLUMES

The existing traffic volumes in the study area during the weekday AM and PM peak hours are illustrated in **Figure 2-5**. No volume balancing was undertaken as all traffic data was collected on the same survey day.

Figure 2-5: Existing (2023) Weekday Peak Hour Traffic Volumes



3 FUTURE BACKGROUND TRAFFIC CONDITIONS

For the analysis of future background traffic conditions, this study considers a five-year horizon to the year 2028, representing the interim site condition; a 10-year horizon to the year 2033, representing the ultimate site condition; and a 15-year horizon to the year 2038, representing 5-years post build-out.

The following sections discuss planned changes to the transportation network, background developments and corridor growth assumptions.

3.1 TRANSPORTATION NETWORK IMPROVEMENTS

3.1.1 Road Network

No future road network improvements have been identified in the study area. This assumption reflects the inclusion of the Sixth Line widening to four-lanes under existing conditions, as road works had been completed at the time of traffic data collection.

3.1.2 Transit Network

Dundas Street is identified as a Transit Priority Corridor in the Halton Region Mobility Management Strategy (2017) which indicates the planned provision of transit-supportive facilities such as HOV/BRT lanes, transit signal priority, queue jump facilities, and transit stop improvements. The corridor has been identified for future implementation of Bus Rapid Transit (BRT), as discussed below.

The Dundas BRT project is a planned 48km rapid transit corridor that will run from Highway 6 in the City of Hamilton to the Kipling Transit Hub in the City of Toronto, largely via Dundas Street. The route will initially operate with segments of dedicated bus lanes and mixed traffic. The Dundas Street BRT will operate adjacent to the subject site along Dundas Street, as indicated in **Figure 3-1**. The location of future BRT stations has not been identified within the Oakville section of this project.

Figure 3-1: Dundas BRT Alignment (Source: Metrolinx)

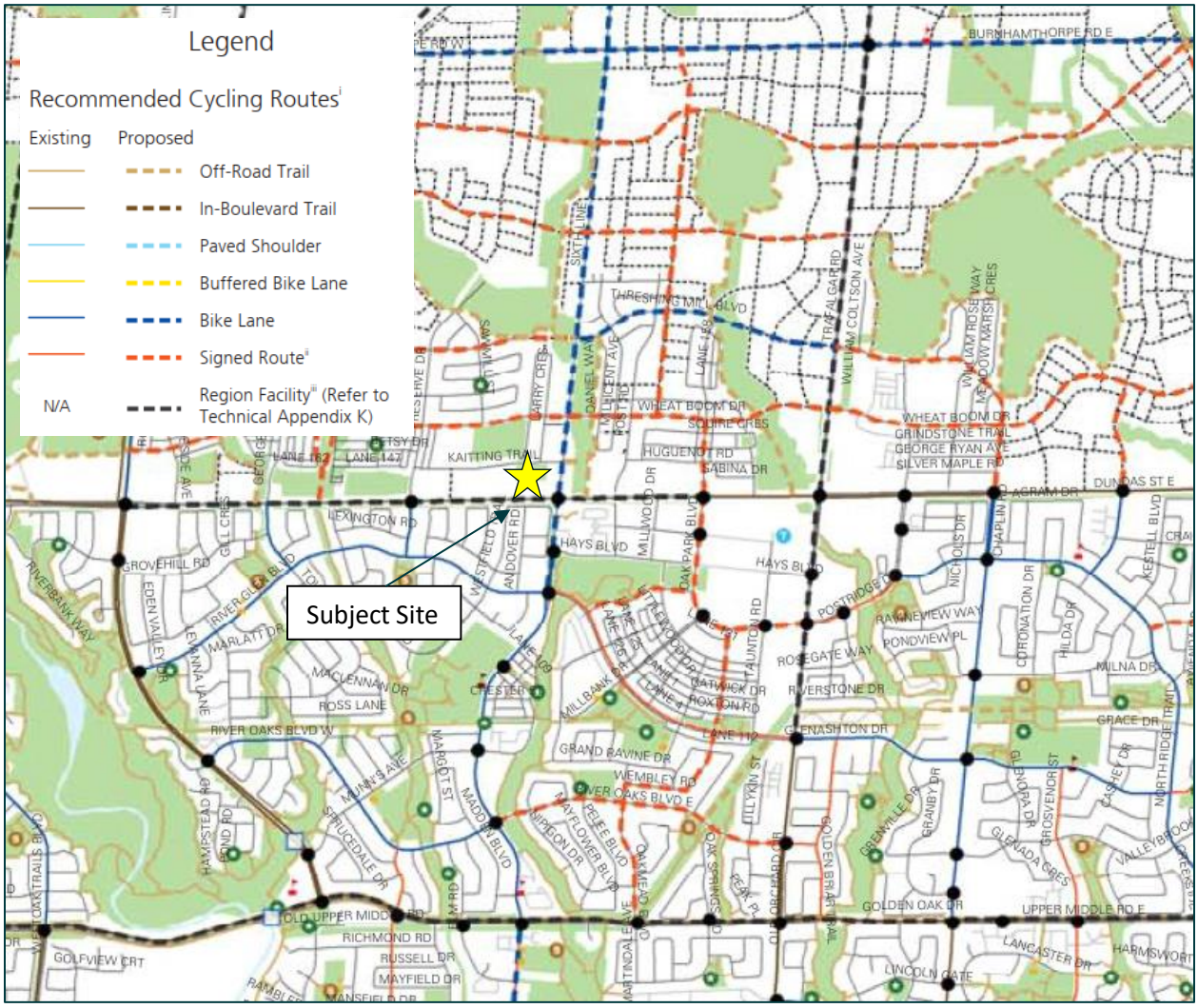
Metrolinx has completed an Initial Business Case and is currently advancing the planning of this project; no firm construction timeline has been established and the analysis assumes that the Dundas BRT will not be implemented within the planning horizons of this study.

3.1.3 Active Network

As per the Town of Oakville 2017 Active Transportation Master Plan (ATMP), a future southern extension of the cycling facilities on Sixth Line (north of Dundas Street) is planned to connect with the existing bike lanes that commence at River Glen Boulevard / Glenashton Drive. **Figure 3-2** illustrates the recommended cycling network.

Note: recommended facilities on Dundas Street and Sixth Line (north of Dundas Street) have subsequently been constructed.

Figure 3-2: Town ATMP Proposed Cycling Facilities (Source: Town of Oakville)



3.2 CORRIDOR GROWTH

Historical TMC data was used to calculate growth rates along Dundas Street West and Sixth Line. No growth was identified during the AM peak period. During the PM peak period, the following growth rates were identified:

- Sixth Line – northbound: No growth
- Sixth Line – southbound: 2% annual growth
- Dundas Street West – eastbound: 1% annual growth
- Dundas Street West – westbound: No growth

Future traffic growth on Sixth Line is expected to stabilize over time as the surrounding North Oakville neighbourhood is constructed and occupied. As a result, a reduced growth rate of 1% per year was applied between the years 2033 to 2038.

Supporting calculations are provided in **Appendix C**.

3.3 BACKGROUND DEVELOPMENTS

Two developments located within or near the study area were considered under future background conditions. The site statistics of the background developments are summarized in **Table 3-1**. Study extracts are provided in **Appendix C**.

Note: additional background developments identified by Town staff in their terms of reference correspondence have subsequently been constructed and were occupied on the date that traffic data collection was undertaken.

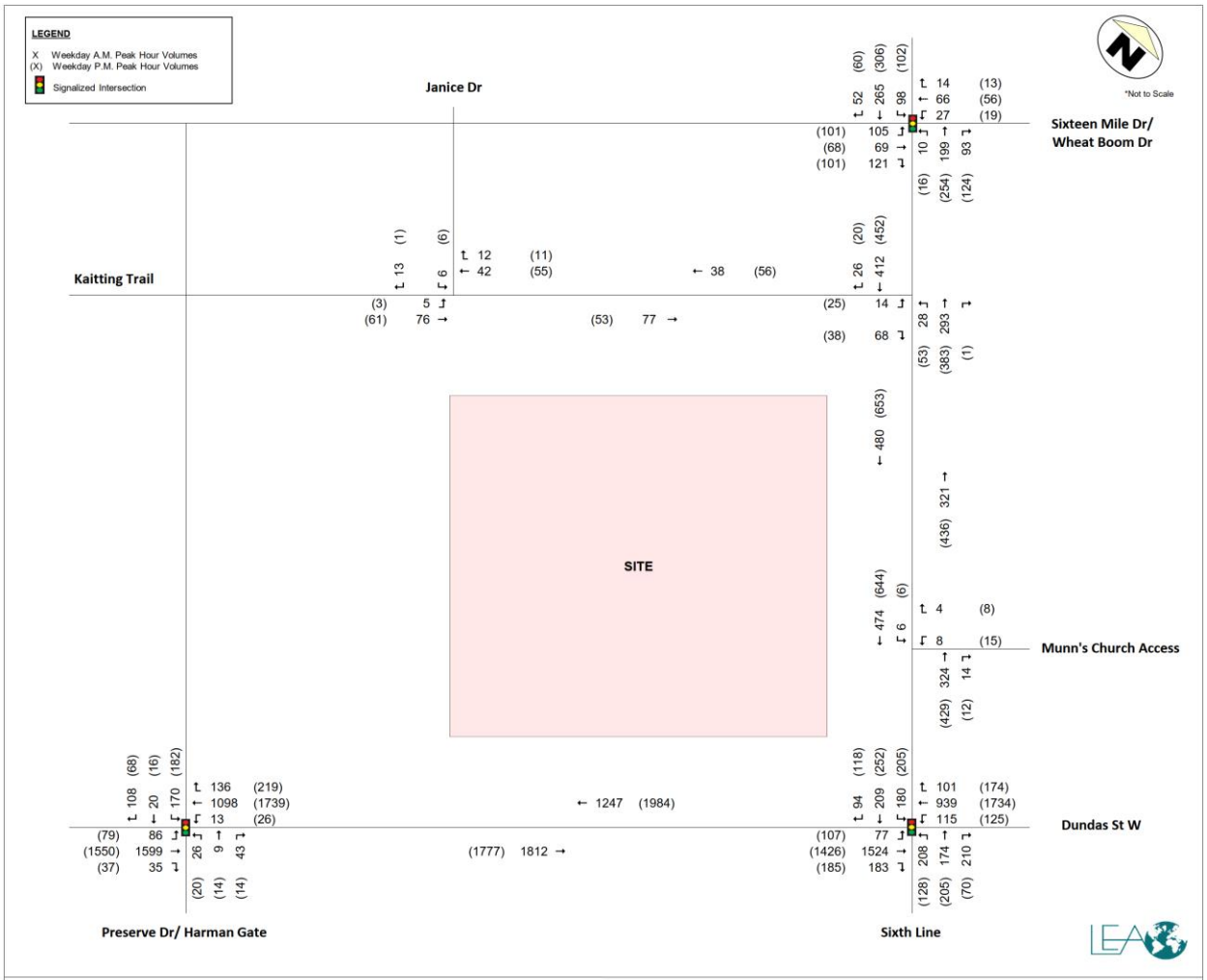
Table 3-1: Background Developments

#	Location	Proposed Development	Source of Traffic Volumes
1	3270 Sixth Line	317 residential units; 140m^2 commercial	Technical Memorandum dated November 18, 2021 (Table 3) CGH Transportation
2	Fernbrook Homes (Seven Oaks)	Nine single family detached housing, and 19 townhomes	Traffic Brief dated February 25, 2022 (Table 1) AECOM

3.4 FUTURE BACKGROUND TRAFFIC VOLUMES

Future background traffic volumes were derived by combining anticipated corridor growth and background development traffic and assigning these volumes onto the future road network. Future background traffic volumes in the study area during the weekday AM and PM peak hours are illustrated in **Figure 3-3**, **Figure 3-4** and **Figure 3-5**.

Figure 3-3: Future Background (2028) Traffic Volumes



FUTURE BACKGROUND TRAFFIC (2028)
Dundas St W & Sixth Line

Figure 3-4: Future Background (2033) Traffic Volumes

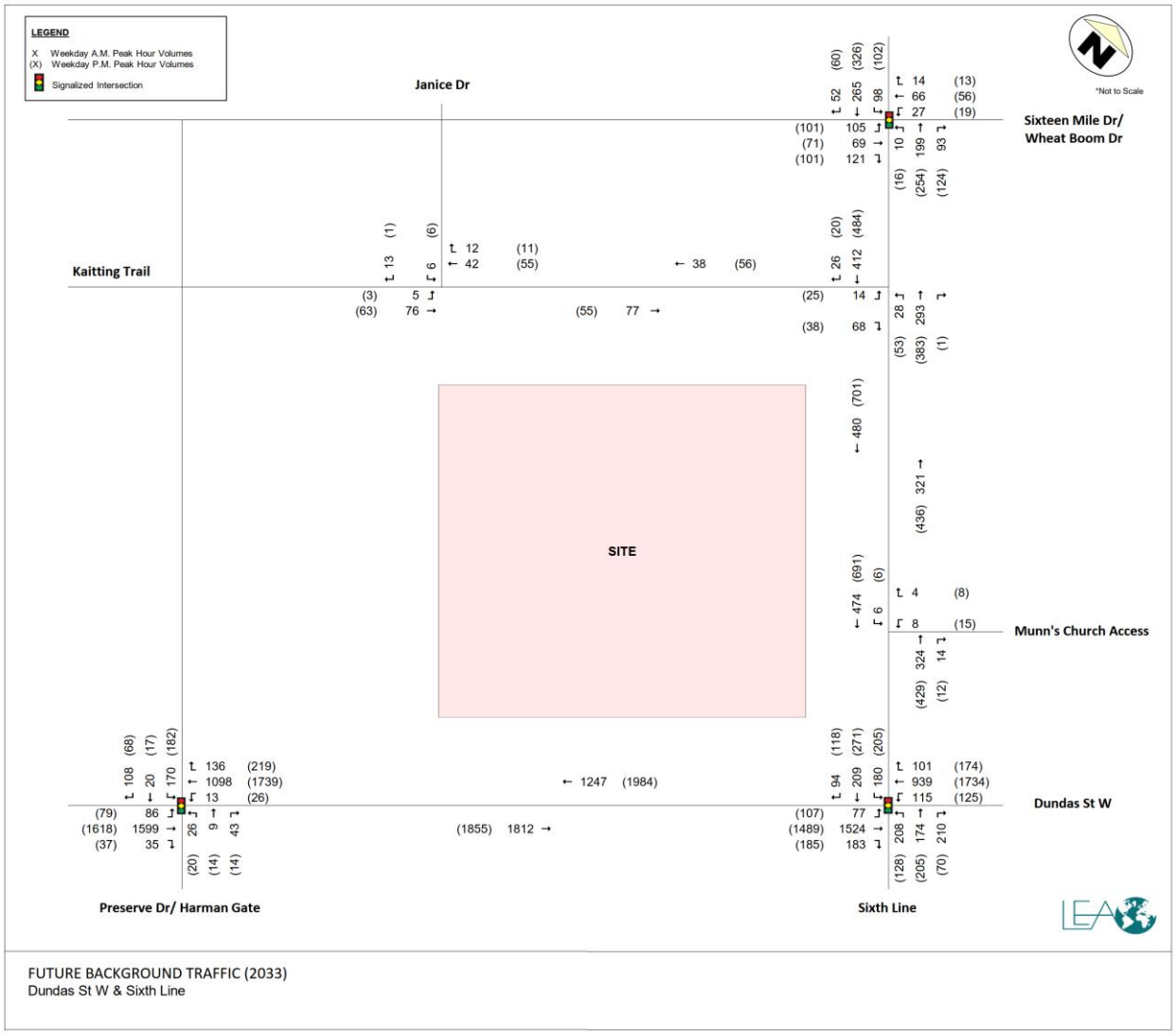
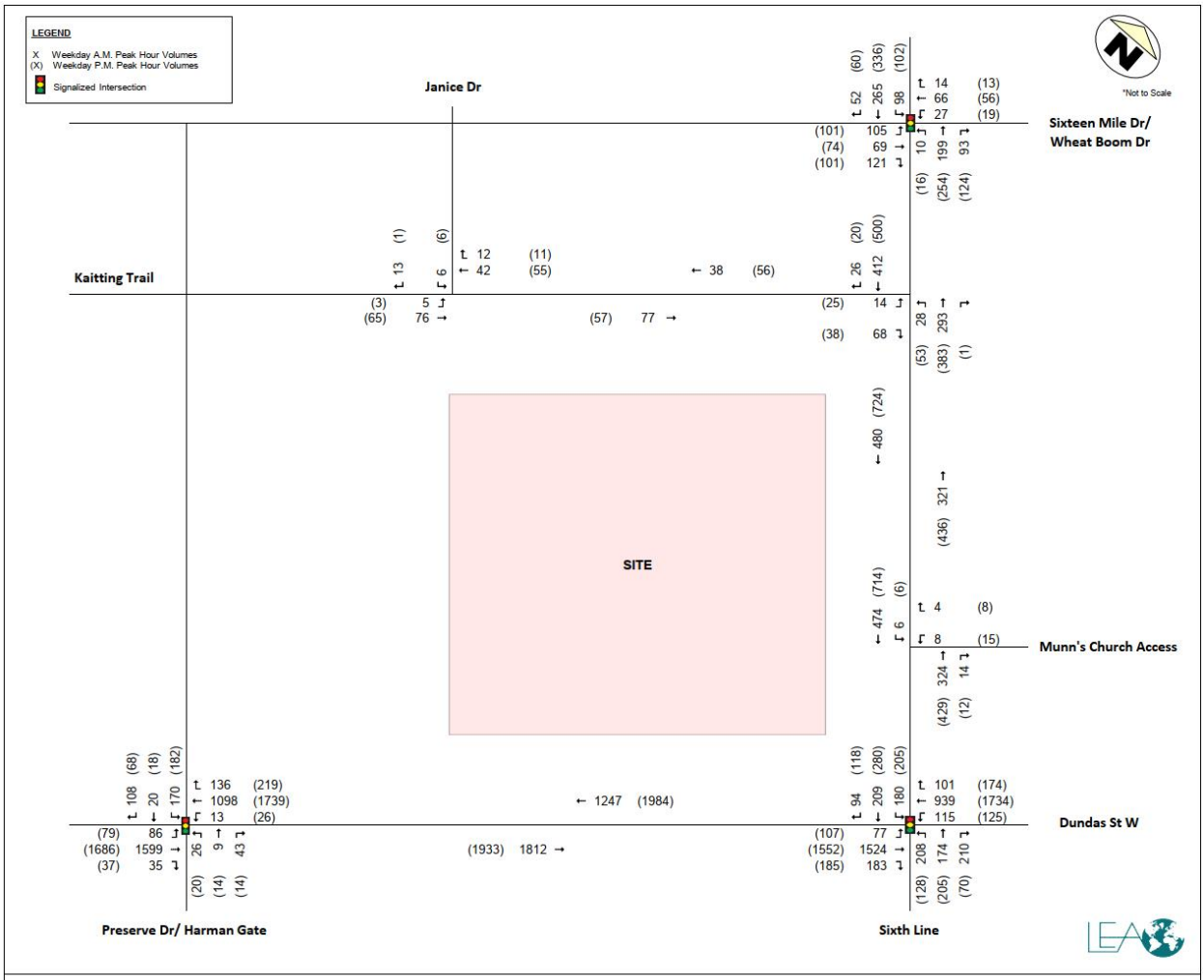


Figure 3-5: Future Background (2038) Traffic Volumes



FUTURE BACKGROUND TRAFFIC (2038)
Dundas St W & Sixth Line

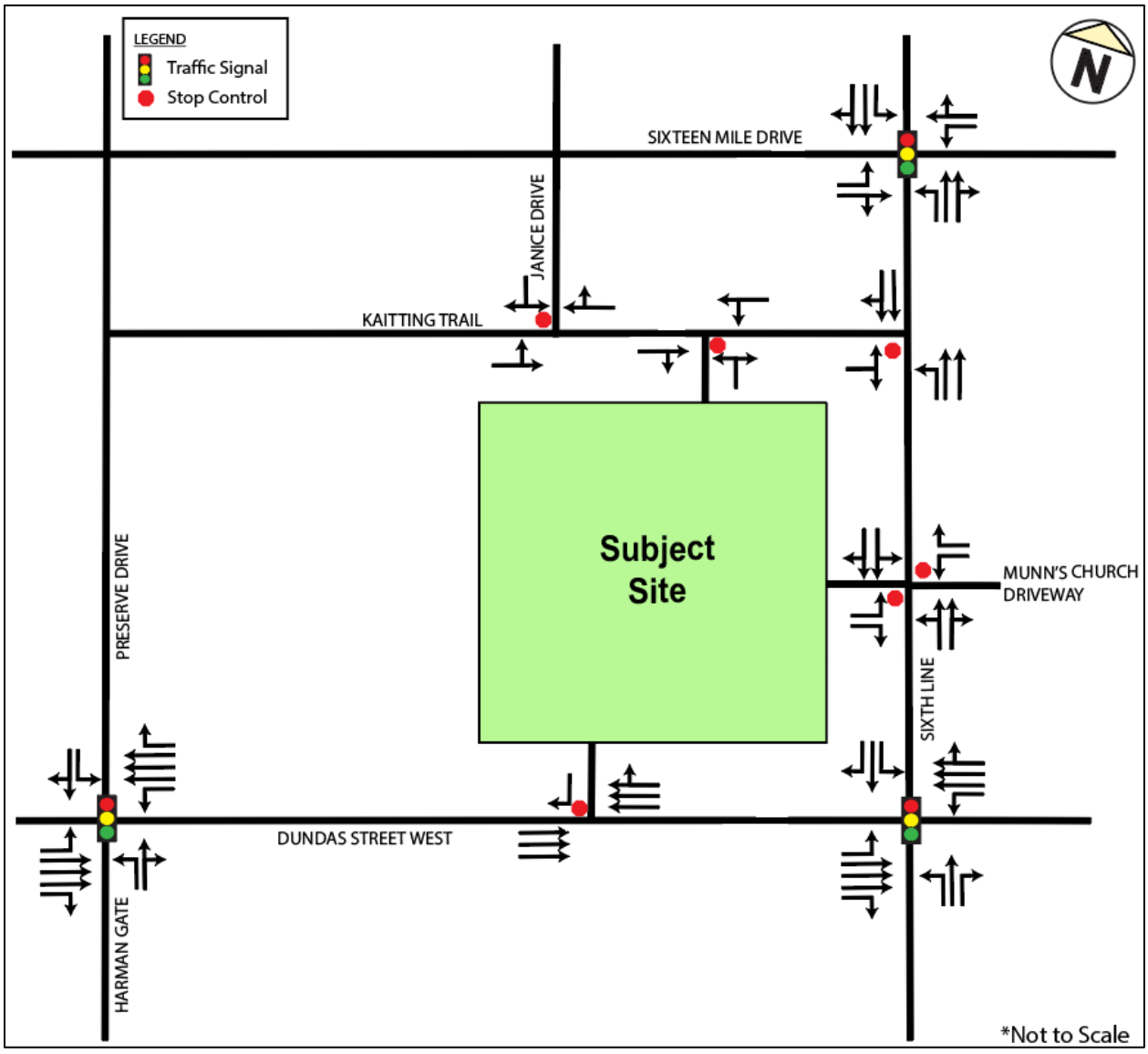
4 SITE GENERATED TRAFFIC & FUTURE TOTAL TRAFFIC

The sections below discuss in detail the calculation, distribution and assignment of site-generated trips.

4.1 FUTURE ROAD NETWORK

The lane configuration of the future road network, with the addition of the site accesses, is shown in **Figure 4-1**.

Figure 4-1: Future Lane Configuration and Traffic Control



4.2 MODAL SPLIT

The existing study area mode split was determined based on the Transportation Tomorrow Survey (TTS) 2016, as summarized in **Table 4-1**. Supporting calculations are provided in **Appendix D**.

Table 4-1: Study Area Modal Split

Modes	Modal Split	
	Residential	Retail
Auto Driver	86%	76%
Auto Passenger	7%	19%
Transit	6%	2%
Walking/Cycling	1%	3%
TOTAL	100%	100%

4.3 TRIP GENERATION

Site trip generation was estimated based on the trip rates provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Site interaction between the retail and residential uses was calculated based on the ITE Trip Generation Handbook, 3rd Edition. A pass-by reduction was applied to the retail component based on the rates provided in the ITE Handbook. The predicted vehicle trip generation of each development phase is provided in the tables below.

Table 4-2: Site Vehicle Trip Generation (Phase 1-2)

PHASE	Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
PHASE 2 Building A+B	Residential (*LUC 221 Multifamily Housing Mid-rise*)	ITE Person Trip Rate (/Unit)	0.11	0.37	0.48	0.31	0.22	0.53
		ITE Person Trips	36	121	157	103	71	174
		Site Interaction	-1	-1	-2	-13	-5	-18
		Total External Trips	35	120	155	90	66	156
		External Auto Trips	**30**	**103**	**133**	**78**	**57**	**135**
PHASE 2 TH Block 1+2	Residential (*LUC 220 Multifamily Housing Low-rise*)	ITE Person Trip Rate (/Unit)	0.08	0.30	0.38	0.34	0.20	0.54
		ITE Person Trips	1	5	6	6	3	9
		Site Interaction	0	0	0	-1	0	-1
		Total External Trips	1	5	6	5	3	8
		External Auto Trips	**1**	**4**	**5**	**4**	**3**	**7**
PHASE 1 Retail/ Shoppers	Retail (*LUC 880 Pharmacy/ Drugstore no DT*)	ITE Auto Trip Rate (/1000 ft^2)	1.91	1.03	2.94	4.17	4.34	8.51
		ITE Auto Trips	29	15	44	63	65	128
		Adjusted Person Trips	36	18	54	80	81	161
		Site Interaction	-2	-1	-3	-8	-21	-29
		Total External Trips	34	17	51	72	60	132
		External Auto Trips	26	13	39	55	46	101
		Pass-By (25% AM 53% PM)	7	3	10	29	24	53
		Primary External Auto Trips	**19**	**10**	**29**	**26**	**22**	**48**
Total Phase 1 Auto Trips			**50**	**117**	**167**	**108**	**82**	**190**

The Phase 1-2 development is expected to generate 167 two-way vehicle trips (50 inbound, 117 outbound) during the weekday AM peak hour and 190 two-way vehicle trips (108 inbound, 82 outbound) during the weekday PM peak hour.

Table 4-3: Site Vehicle Trip Generation (Phase 3)

PHASE	Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
PHASE 3 Building C	Residential (*LUC 221 Multifamily Housing Mid-rise*)	ITE Person Trip Rate (/Unit)	0.11	0.37	0.48	0.31	0.22	0.53
		Adjusted Person Trips	22	73	95	61	43	104
		Site Interaction	-1	-1	-2	-5	-2	-7
		Total External Trips	21	72	93	56	41	97
		External Auto Trips	**18**	**62**	**80**	**48**	**35**	**83**
Phase 3 Total Auto Trips			**18**	**62**	**80**	**48**	**35**	**83**
Interim Total Auto Trips (Phase 1-3)			**69**	**179**	**248**	**154**	**116**	**270**

The Phase 3 development is expected to generate 80 two-way vehicle trips (18 inbound, 62 outbound) during the weekday AM peak hour and 83 two-way vehicle trips (48 inbound, 35 outbound) during the weekday PM peak hour.

The interim condition (combining Phase 1-3) is expected to generate 248 two-way vehicle trips (69 inbound, 179 outbound) during the weekday AM peak hour and 270 two-way vehicle trips (154 inbound, 116 outbound) during the weekday PM peak hour.

Table 4-4: Site Vehicle Trip Generation (Phase 4)

PHASE	Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
PHASE 4 Building D	Residential (*LUC 221 Multifamily Housing Mid-rise*)	ITE Person Trip Rate (/Unit)	0.11	0.37	0.48	0.31	0.22	0.53
		Adjusted Person Trips	18	59	77	50	35	85
		Site Interaction	0	0	0	0	0	0
		Total External Trips	18	59	77	50	35	85
		External Auto Trips	**16**	**51**	**67**	**43**	**30**	**73**
PHASE 4 TH Block 3+4	Residential (*LUC 220 Multifamily Housing Low-rise*)	ITE Person Trip Rate (/Unit)	0.08	0.30	0.38	0.34	0.20	0.54
		Adjusted Person Trips	1	3	4	4	2	6
		Site Interaction	0	0	0	0	0	0
		Total External Trips	1	3	4	4	2	6
		External Auto Trips	**1**	**3**	**4**	**3**	**2**	**5**
Phase 4 Total Auto Trips			**17**	**54**	**71**	**46**	**32**	**78**
Ultimate Phase Total Auto Trips (Phase 4, no Phase 1 retail)			**67**	**223**	**290**	**174**	**126**	**300**

The Phase 4 development is expected to generate 71 two-way vehicle trips (17 inbound, 54 outbound) during the weekday AM peak hour and 78 two-way vehicle trips (46 inbound, 32 outbound) during the weekday PM peak hour. It is noted that the at-grade retail proposed in Building D was not included in the trip generation calculation, as the retail is intended to primarily serve the residential uses on-site and walk-in trips from the surrounding neighbourhood, and is not expected to generate a significant volume of vehicle trips.

At full buildout of the ultimate, the proposed development is expected to generate 290 two-way vehicle trips (67 inbound, 223 outbound) during the weekday AM peak hour and 300 two-way vehicle trips (174 inbound, 126 outbound) during the weekday PM peak hour.

4.3.1 Multi-Modal Trip Generation

Site person trips were converted into trips by mode using the local mode split. The following tables illustrate trip generation by travel mode per development phase.

Table 4-5: Site Multi-Modal Trip Generation – Interim Condition

Description	Residential Mode Split	Retail Mode Split	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
Person Trips	100%	100%	92	214	306	220	169	389
Auto Driver Trips	86%	76%	76	182	258	183	140	323
Auto Passenger Trips	6%	19%	10	17	27	23	19	42
Transit Trips	6%	2%	4	12	16	9	7	16
Active Trips	1%	3%	2	3	5	5	3	8

Table 4-6: Site Multi-Modal Trip Generation – Ultimate Condition

Description	Residential Mode Split	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Person Trips	100%	77	259	336	202	146	348
Auto Driver Trips	86%	67	223	290	174	126	300
Auto Passenger Trips	6%	5	17	22	13	9	23
Transit Trips	6%	4	15	19	12	8	20
Active Trips	1%	1	4	5	3	2	5

The proposed development is expected to generate 336 total person trips (77 inbound, 259 outbound) during the weekday AM peak hour and 348 total person trips (202 inbound, 146 outbound) during the weekday PM peak hour.

4.4 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution of site traffic was estimated using TTS 2016 data. Detailed TTS calculations are provided in **Appendix D**.

Table 4-7: Trip Distribution (Residential)

Direction	IN	OUT
Dundas St W (East)	5%	27%
Dundas St W (West)	42%	15%
Sixth Line (North)	14%	20%
Sixth Line (South)	18%	12%
Kaitting Trail	11%	12%
Sixteen Mile Dr	10%	14%

Table 4-8: Trip Distribution (Retail)

Direction	IN	OUT
Dundas St W (East)	11%	23%
Dundas St W (West)	36%	4%
Sixth Line (North)	12%	22%
Sixth Line (South)	16%	14%
Kaitting Trail	6%	15%
Sixteen Mile Dr	19%	21%

Trip assignment was determined based on the trip origin and destination, site accesses, and logical routing. Total external site-generated traffic volumes for the interim and ultimate condition during the weekday AM and PM peak hours are illustrated in **Figure 4-2** and **Figure 4-3** respectively.

Figure 4-2: Site Traffic – Interim Condition

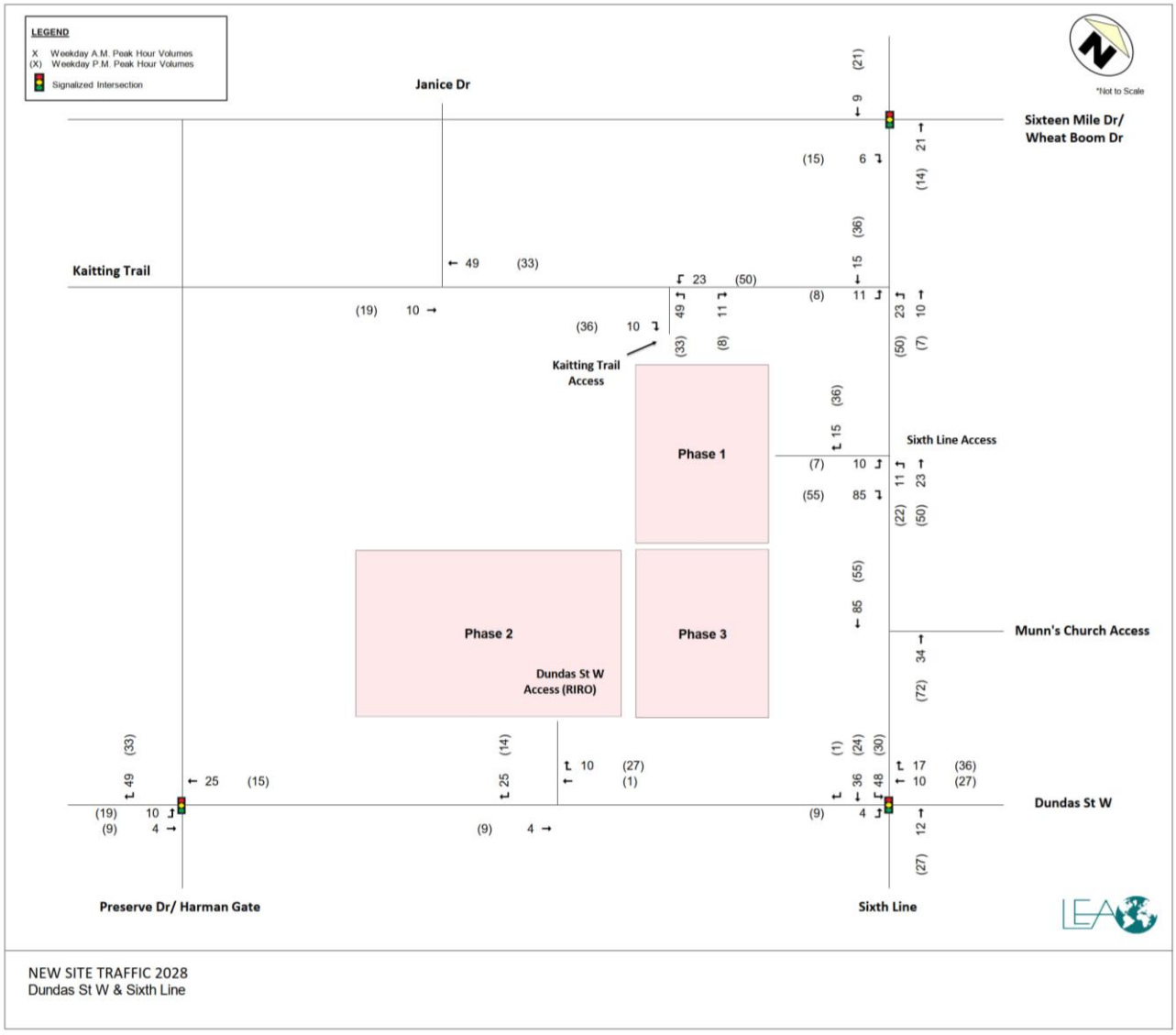
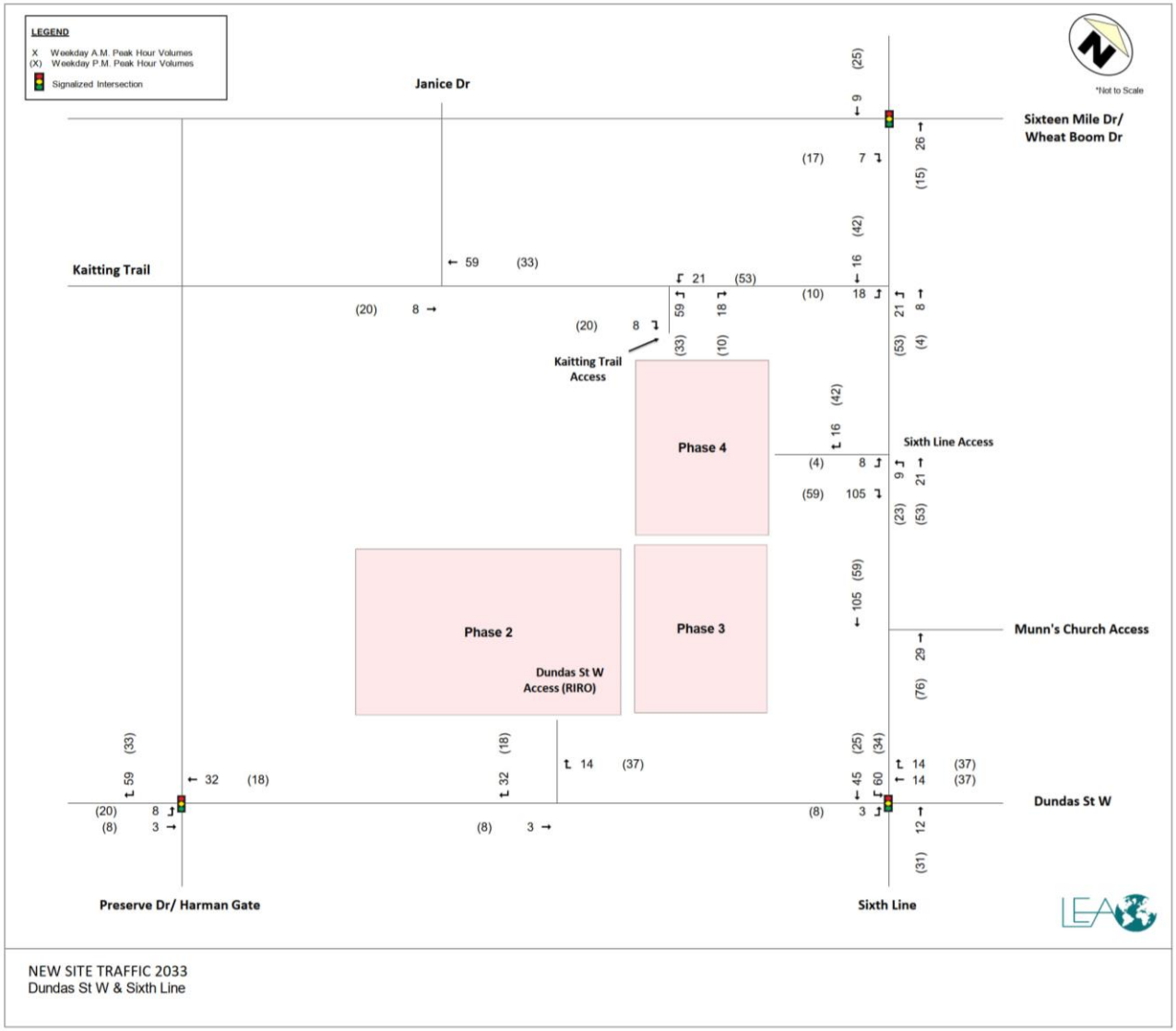


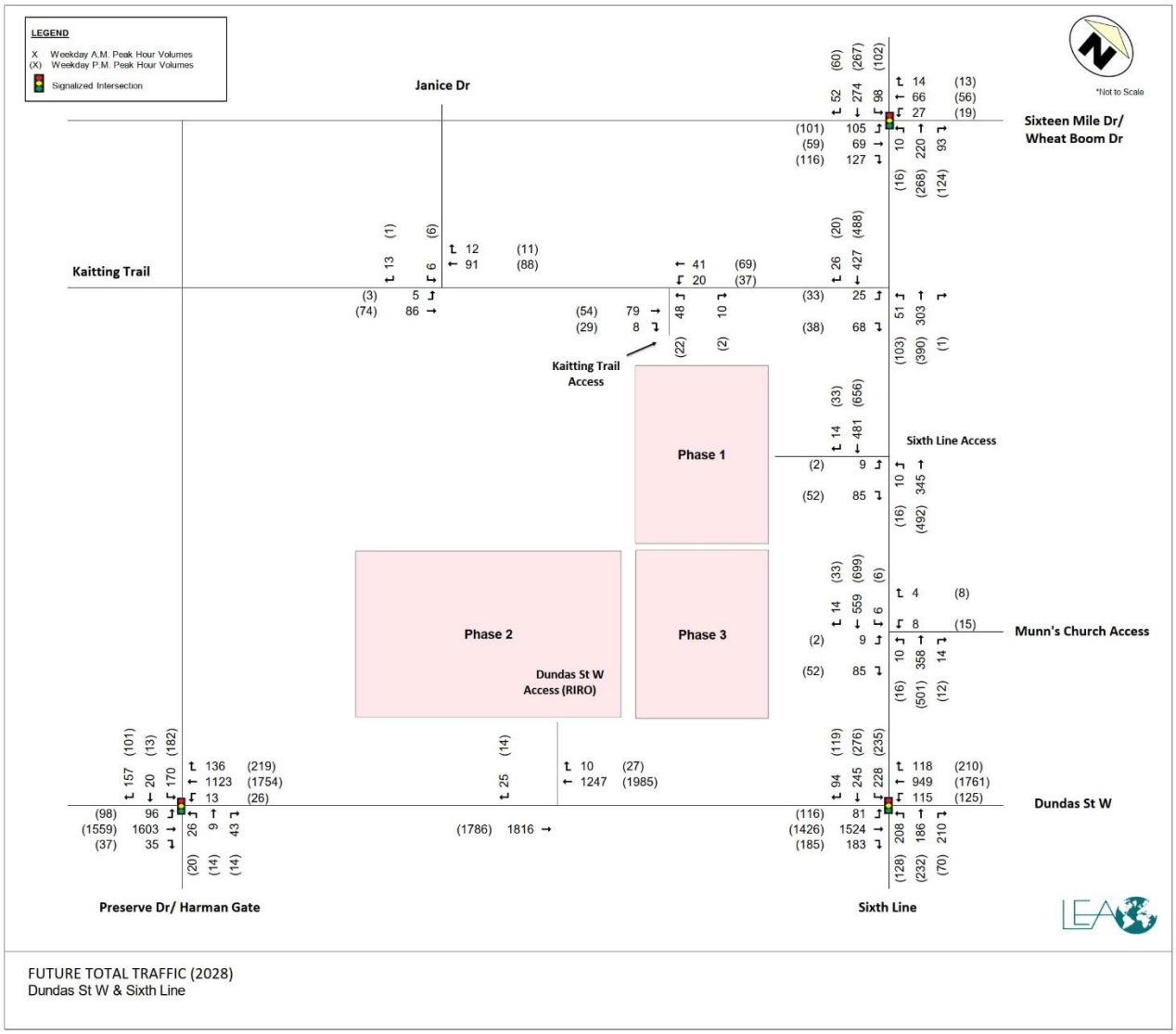
Figure 4-3: Site Traffic – Ultimate Condition



4.5 FUTURE TOTAL TRAFFIC VOLUMES

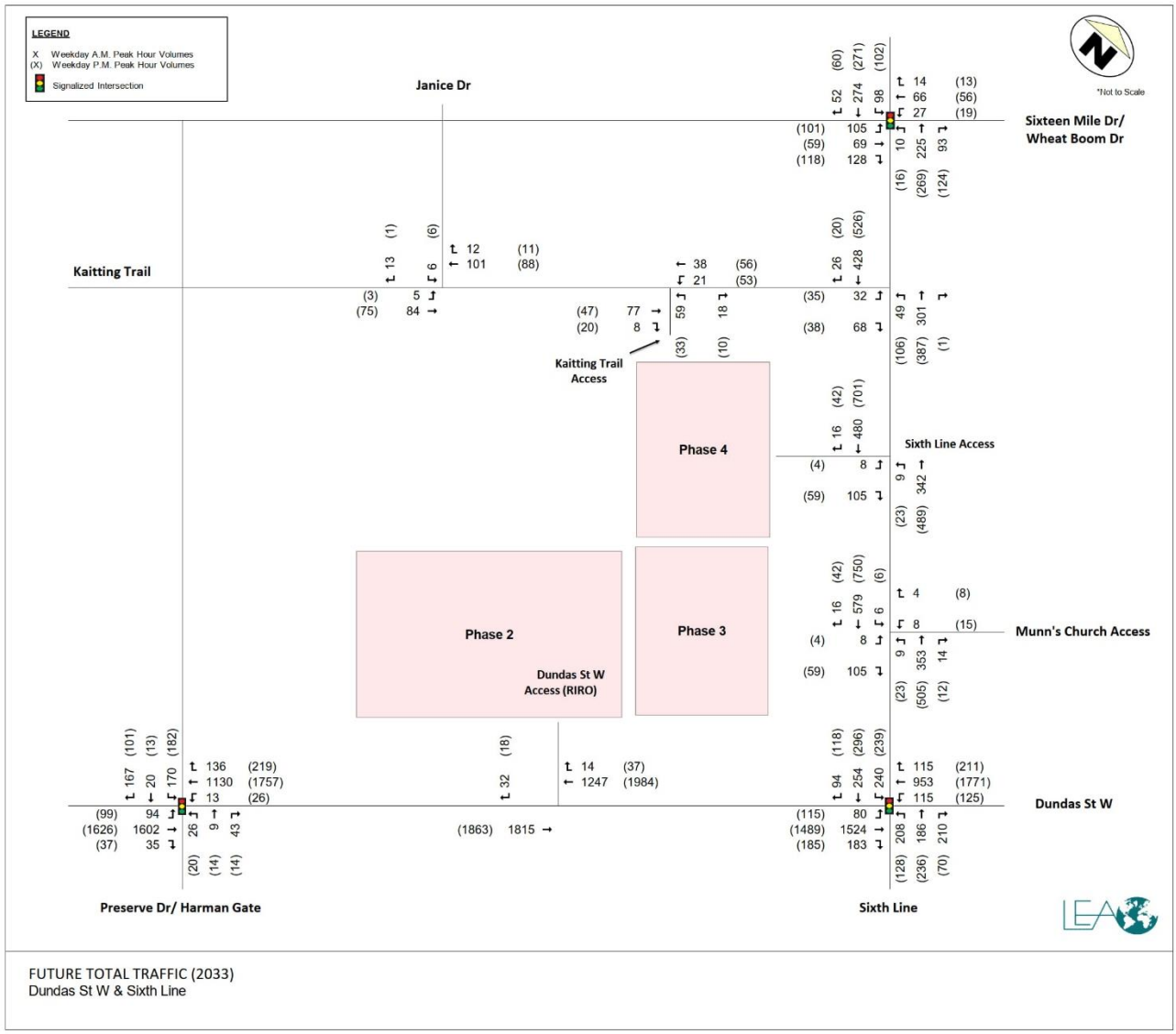
Future total transportation conditions include the addition of site trips to future background volumes. Future total traffic volumes during the weekday AM and PM peak hours for the three future horizons are illustrated in **Figure 4-4**, **Figure 4-5** and **Figure 4-6**.

Figure 4-4: Future Total (2028) Peak Hour Traffic Volumes



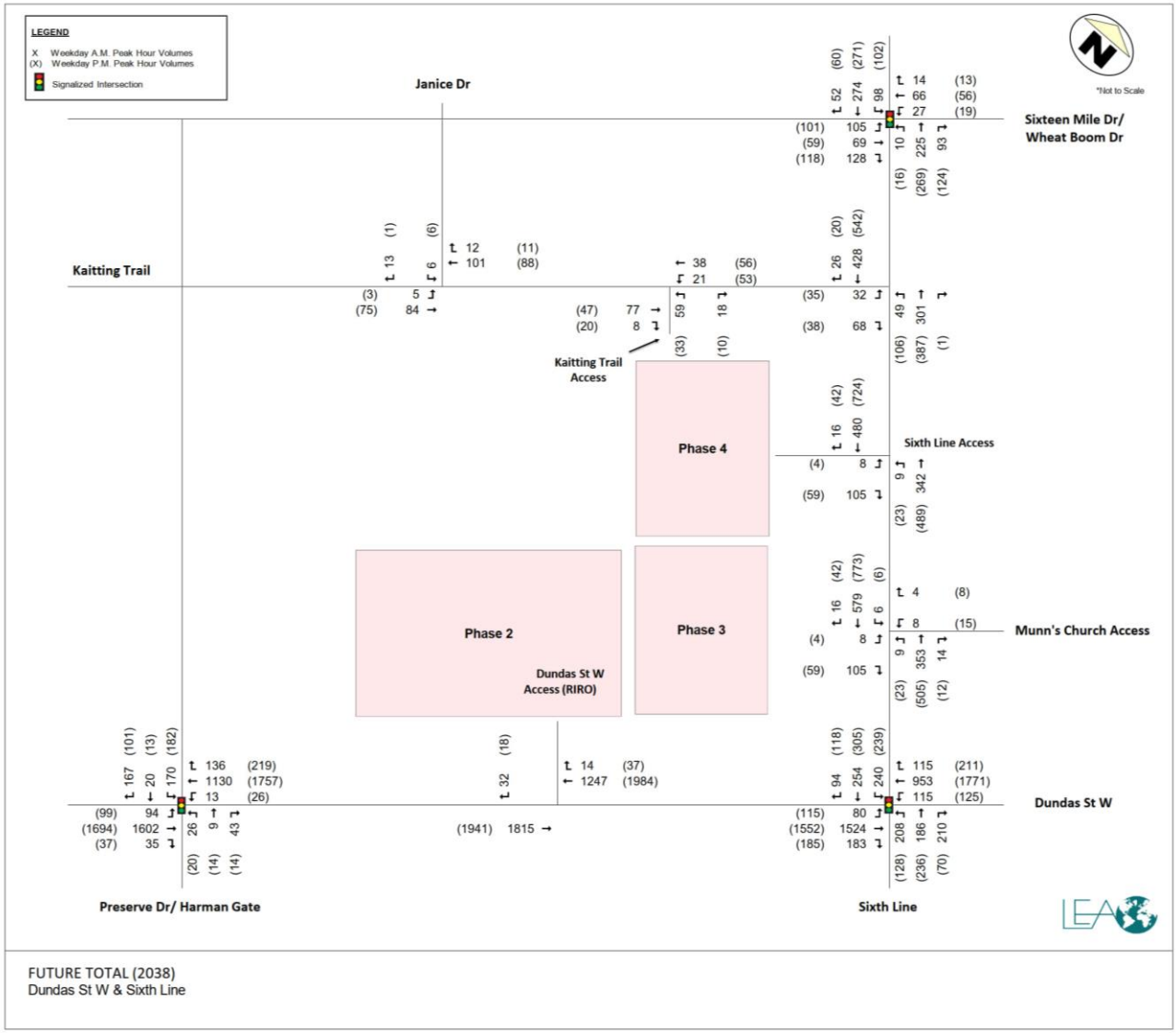
FUTURE TOTAL TRAFFIC (2028)
Dundas St W & Sixth Line

Figure 4-5: Future Total (2033) Peak Hour Traffic Volumes



FUTURE TOTAL TRAFFIC (2033)
Dundas St W & Sixth Line

Figure 4-6: Future Total (2038) Peak Hour Traffic Volumes



FUTURE TOTAL (2038)
Dundas St W & Sixth Line

5 INTERSECTION CAPACITY ANALYSIS RESULTS

The intersection capacity analysis for the study area was undertaken using Synchro version 11.0, which is based on the Highway Capacity Manual 2000 methodology and adhering to Halton Region's *Transportation Impact Study Guidelines* (January 2015). Critical movements at signalized intersections are defined as through and shared movements with a volume-to-capacity (V/C) ratio of 0.85 or above, exclusive turning movements with a V/C ratio of 0.90 or above, or queues exceeding available storage lengths. Critical movements at unsignalized intersections are defined as having a level of service (LOS) E or F, or where queues exceed available storage lengths. Peak Hour Factors (PHF) have been calculated based on turning movement counts collected for each movement.

The following sections provide an analysis of the intersection operations under existing, future background, and future total scenarios for all three future horizons. Detailed capacity results are provided in **Appendix E, Appendix F,** and **Appendix G**.

5.1 DUNDAS STREET & SIXTH LINE

For the analysis of the intersection of Dundas Street and Sixth Line, the signal timing plan (STP) was optimized during both weekday peak hours to improve intersection operations in the future 2028+ scenarios. The existing AM peak period signal timing plan is shown in **Figure 5-1** and the recommended optimized plan is shown in **Figure 5-2**.

Figure 5-1: Existing Weekday AM STP - Dundas Street and Sixth Line

Figure 5-2: Recommended Weekday AM STP - Dundas Street and Sixth Line

The existing PM peak period signal timing plan is shown in **Figure 5-3** and the recommended optimized plan is shown in **Figure 5-4**.

Figure 5-3: Existing Weekday PM STP - Dundas Street and Sixth Line

Figure 5-4: Recommended Weekday PM STP - Dundas Street and Sixth Line

A summary of the proposed STP changes is presented in **Table 5-1**.

Table 5-1: Signal Timing Optimization Comparison – Dundas St W & Sixth Line

		WBL	EBT	NBL	SBT	EBL	WBT	SBL	NBT
AM PEAK	Optimized	14	75	14	37	14	75	14	37
	Non-Optimized	14	71	14	41	14	71	14	41
	Difference	-	-4s	-	+4s	-	-4s	-	+4s
PM PEAK	Optimized	13	79	11	37	13	79	11	37
	Non-Optimized	19	68	16	37	19	68	16	37
	Difference	-6s	-11s	+5s	-	-6s	-11s	+5s	-

The results for the intersection capacity analysis over three future horizons for the intersection of Dundas Street West and Sixth Line are summarized in the following tables.

Table 5-2: Intersection Capacity Analysis – Dundas St W & Sixth Line (2028)

AM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**32**	**C**	-	-	**31**	**C**	-	-	**33**	**C**
EBL	75	0.30	18	B	77	0.29	16	B	81	0.31	17	B
EBT	1524	0.65	30	C	1524	0.61	27	C	1524	0.61	27	C
EBR	183	0.13	22	C	183	0.12	19	B	183	0.12	19	B
WBL	115	0.70	34	C	115	0.66	28	C	115	0.66	28	C
WBTR	1023	0.46	26	C	1040	0.44	24	C	1067	0.46	24	C
NBL	208	0.59	41	D	208	0.71	50	D	208	0.78	58	E
NBT	167	0.37	46	D	174	0.44	50	D	186	0.47	51	D
NBR	210	0.22	43	D	210	0.29	47	D	210	0.31	48	D
SBL	145	0.39	36	D	180	0.55	42	D	228	0.72	51	D
SBT	183	0.41	47	D	209	0.53	53	D	245	0.62	57	E
SBR	75	0.05	40	D	94	0.06	43	D	94	0.06	43	D
PM PK HR	**Existing**				**Future Background (2028)**				**Future Total (2028)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**32**	**C**	-	-	**37**	**D**	-	-	**37**	**D**
EBL	101	0.64	33	C	107	0.64	35	D	116	0.67	40	D
EBT	1237	0.52	25	C	1426	0.65	30	C	1426	0.65	30	C
EBR	185	0.13	19	B	185	0.14	22	C	185	0.14	22	C
WBL	125	0.53	19	B	125	0.63	27	C	125	0.63	27	C
WBTR	1858	0.78	31	C	**1908**	**0.86**	**38**	**D**	**1971**	**0.86**	**36**	**D**
NBL	128	0.46	42	D	128	0.47	39	D	128	0.51	39	D
NBT	183	0.44	50	D	205	0.51	52	D	232	0.58	55	D
NBR	70	0.05	42	D	70	0.05	43	D	70	0.05	43	D
SBL	183	0.66	50	D	205	0.66	44	D	235	0.81	57	E
SBT	179	0.44	50	D	252	0.62	55	E	276	0.68	58	E
SBR	106	0.07	43	D	118	0.08	43	D	119	0.08	43	D

Under existing weekday AM and PM peak hour conditions, the signalized intersection of Dundas Street & Sixth Line is operating with an overall LOS C during the weekday AM and PM peak hour. No constraints are identified during the existing scenario.

Under the future background (2028) scenario, the westbound through/right is marginally deemed critical with a V/C of 0.86 and LOS D during the weekday PM peak hour. Similar operating conditions are predicted

under future total (2028) conditions. No intersection modifications are recommended other than signal optimization.

Table 5-3: Intersection Capacity Analysis – Dundas St W & Sixth Line (2033)

AM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	**-**	**-**	**32**	**C**	**-**	**-**	**31**	**C**	**-**	**-**	**33**	**C**
EBL	75	0.30	18	B	77	0.29	16	B	80	0.31	17	B
EBT	1524	0.65	30	C	1524	0.61	27	C	1524	0.61	27	C
EBR	183	0.13	22	C	183	0.12	19	B	183	0.12	19	B
WBL	115	0.70	34	C	115	0.66	28	C	115	0.66	28	C
WBTR	1023	0.46	26	C	1040	0.44	24	C	1068	0.46	24	C
NBL	208	0.59	41	D	208	0.71	50	D	208	0.80	60	E
NBT	167	0.37	46	D	174	0.44	50	D	186	0.47	51	D
NBR	210	0.22	43	D	210	0.29	47	D	210	0.32	48	D
SBL	145	0.39	36	D	180	0.55	42	D	240	0.76	54	D
SBT	183	0.41	47	D	209	0.53	53	D	254	0.65	58	E
SBR	75	0.05	40	D	94	0.06	43	D	94	0.06	43	D
PM PK HR	**Existing**				**Future Background (2033)**				**Future Total (2033)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	**-**	**-**	**32**	**C**	**-**	**-**	**37**	**D**	**-**	**-**	**39**	**D**
EBL	101	0.64	33	C	107	0.64	35	C	115	0.68	40	D
EBT	1237	0.52	25	C	1489	0.68	31	C	1489	0.66	30	C
EBR	185	0.13	19	B	185	0.14	22	C	185	0.14	21	C
WBL	125	0.53	19	B	125	0.66	30	C	125	0.64	28	C
WBTR	1858	0.78	31	C	**1908**	**0.86**	**38**	**D**	**1982**	**0.88**	**38**	**D**
NBL	128	0.46	42	D	128	0.50	39	D	128	0.59	44	D
NBT	183	0.44	50	D	205	0.51	52	D	236	0.59	55	D
NBR	70	0.05	42	D	70	0.05	43	D	70	0.05	43	D
SBL	183	0.66	50	D	205	0.66	44	D	**239**	**0.91**	**78**	**E**
SBT	179	0.44	50	D	271	0.67	57	E	296	0.74	62	E
SBR	106	0.07	43	D	118	0.08	43	D	118	0.08	43	D

Under future background (2033) conditions, the westbound through/right movement remains critical during the PM peak hour with a V/C of 0.86 and LOS D. Under future total (2033) conditions, the addition of full buildout site traffic is expected to have an acceptable impact on intersection operations. The southbound left is marginally deemed critical with a V/C of 0.91 and LOS E; site traffic is expected to add 34 vehicles to this movement. No signal timing modifications are recommended to preserve east-west corridor operations along Dundas Street.

Table 5-4: Intersection Capacity Analysis – Dundas St W & Sixth Line (2038)

AM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**32**	**C**	-	-	**31**	**C**	-	-	**33**	**C**
EBL	75	0.30	18	B	77	0.29	16	B	80	0.31	17	B
EBT	1524	0.65	30	C	1524	0.61	27	C	1524	0.61	27	C
EBR	183	0.13	22	C	183	0.12	19	B	183	0.12	19	B
WBL	115	0.70	34	C	115	0.66	28	C	115	0.66	28	C
WBTR	1023	0.46	26	C	1040	0.44	24	C	1068	0.46	24	C
NBL	208	0.59	41	D	208	0.71	50	D	208	0.80	60	E
NBT	167	0.37	46	D	174	0.44	50	D	186	0.47	51	D
NBR	210	0.22	43	D	210	0.29	47	D	210	0.32	48	D
SBL	145	0.39	36	D	180	0.55	42	D	240	0.76	54	D
SBT	183	0.41	47	D	209	0.53	53	D	254	0.65	58	E
SBR	75	0.05	40	D	94	0.06	43	D	94	0.06	43	D
PM PK HR	**Existing**				**Future Background (2038)**				**Future Total (2038)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**32**	**C**	-	-	**38**	**D**	-	-	**39**	**D**
EBL	101	0.64	33	C	107	0.65	35	D	115	0.68	40	D
EBT	1237	0.52	25	C	1552	0.71	32	C	1552	0.69	30	C
EBR	185	0.13	19	B	185	0.15	23	C	185	0.14	21	C
WBL	125	0.53	19	B	125	0.68	35	C	125	0.67	31	C
WBTR	1858	0.78	31	C	**1908**	**0.86**	**38**	**D**	**1982**	**0.88**	**38**	**D**
NBL	128	0.46	42	D	128	0.52	40	D	128	0.61	44	D
NBT	183	0.44	50	D	205	0.51	52	D	236	0.59	55	D
NBR	70	0.05	42	D	70	0.05	43	D	70	0.05	43	D
SBL	183	0.66	50	D	205	0.66	44	D	**239**	**0.91**	**78**	**E**
SBT	179	0.44	50	D	280	0.69	59	E	305	0.76	63	E
SBR	106	0.07	43	D	118	0.08	43	D	118	0.08	43	D

Under future background and total (2038) conditions, all movements are expected to operate similar to the 2028 and 2033 scenarios. The analysis results indicate that site traffic is expected to have an acceptable impact on intersection operations.

5.1.1 Queue Analysis – Dundas Street & Sixth Line

A queue assessment was also completed for the intersection of Dundas Street and Sixth Line under the existing and future (2038) horizons. The results are shown in **Table 5-5**.

Table 5-5: Queue Analysis – Dundas St W & Sixth Line (Existing and 2038)

	Queue Summary (all units in m)								
	Mvmt	Available Storage	Existing		Future Background (2038)		Future Total (2038)		Required Additional Storage Length
			50th	95th	50th	95th	50th	95th	
AM PEAK HOUR	EBL	107	7	13	7	13	8	14	-
	EBT	-	69	104	71	107	71	107	-
	EBR	185	0	2	0	2	0	2	-
	WBL	120	1	3	1	3	1	3	-
	WBT	-	56	67	57	68	59	70	-
	WBR	-	0	9	0	9	0	9	-
	NBL	90	5	13	5	13	5	13	-
	NBTR	-	2	12	2	12	2	12	-
	SBL	76	37	62	37	62	37	62	-
	SBTR	-	4	20	4	20	4	21	-
PM PEAK HOUR	EBL	107	7	16	7	17	8	26	-
	EBT	-	74	87	105	121	106	122	-
	EBR	185	0	2	0	2	0	2	-
	WBL	120	2	5	2	5	2	5	-
	WBT	-	109	127	111	129	114	130	-
	WBR	NA	0	11	0	11	0	11	-
	NBL	90	4	11	4	11	4	11	-
	NBTR	-	3	11	3	11	3	11	-
	SBL	76	42	68	42	68	42	68	-
	SBTR	-	3	16	4	17	3	17	-

All queues are expected to be accommodated by the existing storage capacity.

5.2 DUNDAS STREET WEST & HARMAN GATE / PRESERVE DRIVE

The results for the intersection capacity analysis over three future horizons for the intersection of Dundas Street West and Harman Gate / Preserve Drive are summarized in the following tables.

Table 5-6: Intersection Capacity Analysis – Dundas St W & Harman Gt / Preserve Dr (2028)

AM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**18**	**B**	-	-	**18**	**B**	-	-	**18**	**B**
EBL	86	0.29	9	A	86	0.29	9	A	96	0.33	10	A
EBT	1569	0.54	15	B	1599	0.55	16	B	1603	0.55	16	B
EBR	35	0.03	10	B	35	0.03	10	B	35	0.03	10	B
WBL	13	0.08	12	B	13	0.08	12	B	13	0.08	12	B
WBT	1079	0.41	16	B	1098	0.42	16	B	1123	0.43	16	B
WBR	136	0.09	13	B	136	0.09	13	B	136	0.09	13	B
NBL	26	0.09	35	D	26	0.09	35	D	26	0.11	36	D
NBTR	52	0.05	35	C	52	0.05	35	C	52	0.05	35	C
SBL	170	0.54	45	D	170	0.54	45	D	170	0.54	45	D
SBTR	128	0.12	36	D	128	0.12	36	D	177	0.15	36	D
PM PK HR	**Existing**				**Future Background (2028)**				**Future Total (2028)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**19**	**B**	-	-	**19**	**B**	-	-	**20**	**B**
EBL	79	0.51	16	B	79	0.51	16	B	98	0.58	20	B
EBT	1326	0.48	15	B	1550	0.56	16	B	1559	0.56	16	B
EBR	37	0.03	11	B	37	0.03	11	B	37	0.03	11	B
WBL	26	0.13	11	B	26	0.16	12	B	26	0.16	12	B
WBT	1727	0.63	19	B	1739	0.64	19	B	1754	0.66	20	C
WBR	219	0.15	13	B	219	0.15	13	B	219	0.15	14	B
NBL	20	0.07	35	C	20	0.07	35	C	20	0.07	35	C
NBTR	28	0.05	35	C	28	0.05	35	C	28	0.05	35	C
SBL	182	0.58	47	D	182	0.58	47	D	182	0.58	47	D
SBTR	81	0.08	35	C	84	0.09	35	D	114	0.10	35	D

Table 5-7: Intersection Capacity Analysis – Dundas St W & Harman Gt / Preserve Dr (2033)

AM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**18**	**B**	-	-	**18**	**B**	-	-	**18**	**B**
EBL	86	0.29	9	A	86	0.29	9	A	94	0.33	10	A
EBT	1569	0.54	15	B	1599	0.55	16	B	1602	0.55	16	B
EBR	35	0.03	10	B	35	0.03	10	B	35	0.03	10	B
WBL	13	0.08	12	B	13	0.08	12	B	13	0.08	12	B
WBT	1079	0.41	16	B	1098	0.42	16	B	1130	0.43	16	B
WBR	136	0.09	13	B	136	0.09	13	B	136	0.09	13	B
NBL	26	0.09	35	D	26	0.09	35	D	26	0.10	36	D
NBTR	52	0.05	35	C	52	0.05	35	C	52	0.05	35	C
SBL	170	0.54	45	D	170	0.54	45	D	170	0.54	45	D
SBTR	128	0.12	36	D	128	0.12	36	D	155	0.14	36	D
PM PK HR	**Existing**				**Future Background (2033)**				**Future Total (2033)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**19**	**B**	-	-	**19**	**B**	-	-	**20**	**C**
EBL	79	0.51	16	B	79	0.51	16	B	99	0.58	20	C
EBT	1326	0.48	15	B	1618	0.58	17	B	1626	0.59	17	B
EBR	37	0.03	11	B	37	0.03	11	B	37	0.03	11	B
WBL	26	0.13	11	B	26	0.17	12	B	26	0.17	12	B
WBT	1727	0.63	19	B	1739	0.64	19	B	1757	0.66	20	C
WBR	219	0.15	13	B	219	0.15	13	B	219	0.15	14	B
NBL	20	0.07	35	C	20	0.07	35	C	20	0.07	35	C
NBTR	28	0.05	35	C	28	0.05	35	C	28	0.05	35	C
SBL	182	0.58	47	D	182	0.58	47	D	182	0.58	47	D
SBTR	81	0.08	35	C	85	0.09	35	D	97	0.09	35	D

Table 5-8: Intersection Capacity Analysis – Dundas St W & Harman Gt / Preserve Dr (2038)

AM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**18**	**B**	-	-	**18**	**B**	-	-	**18**	**B**
EBL	86	0.29	9	A	86	0.29	9	A	94	0.33	10	A
EBT	1569	0.54	15	B	1599	0.55	16	B	1602	0.55	16	B
EBR	35	0.03	10	B	35	0.03	10	B	35	0.03	10	B
WBL	13	0.08	12	B	13	0.08	12	B	13	0.08	12	B
WBT	1079	0.41	16	B	1098	0.42	16	B	1130	0.43	16	B
WBR	136	0.09	13	B	136	0.09	13	B	136	0.09	13	B
NBL	26	0.09	35	D	26	0.09	35	D	26	0.10	36	D
NBTR	52	0.05	35	C	52	0.05	35	C	52	0.05	35	C
SBL	170	0.54	45	D	170	0.54	45	D	170	0.54	45	D
SBTR	128	0.12	36	D	128	0.12	36	D	155	0.14	36	D
PM PK HR	**Existing**				**Future Background (2038)**				**Future Total (2038)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**19**	**B**	-	-	**20**	**B**	-	-	**20**	**C**
EBL	79	0.51	16	B	79	0.51	16	B	99	0.58	20	C
EBT	1326	0.48	15	B	1686	0.61	17	B	1694	0.61	17	B
EBR	37	0.03	11	B	37	0.03	11	B	37	0.03	11	B
WBL	26	0.13	11	B	26	0.18	12	B	26	0.18	13	B
WBT	1727	0.63	19	B	1739	0.64	19	B	1757	0.66	20	C
WBR	219	0.15	13	B	219	0.15	13	B	219	0.15	14	B
NBL	20	0.07	35	C	20	0.07	35	C	20	0.07	35	C
NBTR	28	0.05	35	C	28	0.05	35	C	28	0.05	35	C
SBL	182	0.58	47	D	182	0.58	47	D	182	0.58	47	D
SBTR	81	0.08	35	C	86	0.09	35	D	97	0.09	35	D

No capacity constraints are observed under the existing and future scenarios at the intersection of Dundas Street West & Harman Gate / Preserve Drive, with no movements deemed critical and all experiencing LOS D or better. Site traffic is expected to have an acceptable impact on intersection operations.

5.3 SIXTH LINE & SIXTEEN MILE DRIVE / WHEAT BOOM DRIVE

The results for the intersection capacity analysis over three future horizons for the intersection of Sixth Line and Sixteen Mile Drive / Wheat Boom Drive are summarized in the following tables.

Table 5-9: Intersection Capacity Analysis – Sixth Line & Sixteen Mile Dr/Wheat Boom Dr (2028)

AM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**20**	**B**	-	-	**20**	**B**	-	-	**20**	**B**
EBL	101	0.30	27	C	105	0.31	27	C	105	0.31	27	C
EBTR	190	0.32	27	C	190	0.32	27	C	196	0.32	27	C
WBL	27	0.11	24	C	27	0.11	24	C	27	0.11	24	C
WBTR	80	0.15	25	C	80	0.15	25	C	80	0.15	25	C
NBL	10	0.03	16	B	10	0.03	16	B	10	0.03	16	B
NBTR	280	0.20	19	B	292	0.22	19	B	313	0.24	19	B
SBL	98	0.21	11	B	98	0.21	11	B	98	0.22	11	B
SBTR	224	0.15	14	B	317	0.22	15	B	326	0.23	15	B
PM PK HR	**Existing**				**Future Background (2028)**				**Future Total (2028)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	**19**	**B**	-	-	**19**	**B**	-	-	**19**	**B**
EBL	89	0.22	26	C	101	0.25	26	C	101	0.25	26	C
EBTR	160	0.19	25	C	169	0.23	26	C	175	0.21	25	C
WBL	19	0.05	23	C	19	0.05	23	C	19	0.05	23	C
WBTR	69	0.11	24	C	69	0.11	24	C	69	0.11	24	C
NBL	16	0.03	15	B	16	0.04	15	B	16	0.04	15	B
NBTR	344	0.20	18	B	378	0.24	19	B	392	0.25	19	B
SBL	102	0.19	11	B	102	0.20	11	B	102	0.20	11	B
SBTR	247	0.14	15	B	366	0.22	15	B	327	0.20	15	B

Table 5-10: Intersection Capacity Analysis – Sixth Line & Sixteen Mile Dr/Wheat Boom Dr (2033)

AM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	**-**	**-**	**20**	**B**	**-**	**-**	**20**	**B**	**-**	**-**	**20**	**B**
EBL	101	0.30	27	C	105	0.31	27	C	105	0.31	27	C
EBTR	190	0.32	27	C	190	0.32	27	C	197	0.33	27	C
WBL	27	0.11	24	C	27	0.11	24	C	27	0.11	24	C
WBTR	80	0.15	25	C	80	0.15	25	C	80	0.15	25	C
NBL	10	0.03	16	B	10	0.03	16	B	10	0.03	16	B
NBTR	280	0.20	19	B	292	0.22	19	B	318	0.24	19	B
SBL	98	0.21	11	B	98	0.21	11	B	98	0.22	11	B
SBTR	224	0.15	14	B	317	0.22	15	B	326	0.23	15	B
PM PK HR	**Existing**				**Future Background (2033)**				**Future Total (2033)**			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	**-**	**-**	**19**	**B**	**-**	**-**	**19**	**B**	**-**	**-**	**19**	**B**
EBL	89	0.22	26	C	101	0.25	26	C	101	0.25	26	C
EBTR	160	0.19	25	C	172	0.24	26	C	177	0.21	25	C
WBL	19	0.05	23	C	19	0.05	23	C	19	0.05	23	C
WBTR	69	0.11	24	C	69	0.11	24	C	69	0.11	24	C
NBL	16	0.03	15	B	16	0.04	15	B	16	0.04	15	B
NBTR	344	0.20	18	B	378	0.24	19	B	393	0.25	19	B
SBL	102	0.19	11	B	102	0.20	11	B	102	0.21	11	B
SBTR	247	0.14	15	B	386	0.23	16	B	331	0.20	15	B

Table 5-11: Intersection Capacity Analysis – Sixth Line & Sixteen Mile Dr/Wheat Boom Dr (2038)

AM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	20	B	-	-	20	B	-	-	20	B
EBL	101	0.30	27	C	105	0.31	27	C	105	0.31	27	C
EBTR	190	0.32	27	C	190	0.32	27	C	197	0.33	27	C
WBL	27	0.11	24	C	27	0.11	24	C	27	0.11	24	C
WBTR	80	0.15	25	C	80	0.15	25	C	80	0.15	25	C
NBL	10	0.03	16	B	10	0.03	16	B	10	0.03	16	B
NBTR	280	0.20	19	B	292	0.22	19	B	318	0.24	19	B
SBL	98	0.21	11	B	98	0.21	11	B	98	0.22	11	B
SBTR	224	0.15	14	B	317	0.22	15	B	326	0.23	15	B
PM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	19	B	-	-	19	B	-	-	19	B
EBL	89	0.22	26	C	101	0.25	26	C	101	0.25	26	C
EBTR	160	0.19	25	C	175	0.24	26	C	177	0.21	25	C
WBL	19	0.05	23	C	19	0.05	23	C	19	0.05	23	C
WBTR	69	0.11	24	C	69	0.11	24	C	69	0.11	24	C
NBL	16	0.03	15	B	16	0.04	15	B	16	0.04	15	B
NBTR	344	0.20	18	B	378	0.24	19	B	393	0.25	19	B
SBL	102	0.19	11	B	102	0.20	11	B	102	0.21	11	B
SBTR	247	0.14	15	B	396	0.24	16	B	331	0.20	15	B

No capacity constraints are observed under the existing and future scenarios at the intersection of Sixth Line & Sixteen Mile Drive/Wheat Boom Drive, with no movements deemed critical and all experiencing LOS C or better. Site traffic is expected to have an acceptable impact on intersection operations.

5.4 SIXTH LINE & KAITTING TRAIL

The results for the intersection capacity analysis over three future horizons for the intersection of Sixth Line and Kaitting Trail are summarized in the following tables.

Table 5-12: Intersection Capacity Analysis – Sixth Line & Kaitting Trail (2028)

AM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	2	-
NBL	28	0.03	8	A	28	0.03	9	A	51	0.06	9	A
EBLR	77	0.13	11	B	82	0.16	12	B	93	0.21	14	B
PM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	2	-
NBL	53	0.05	8	A	53	0.05	9	A	103	0.10	9	A
EBLR	49	0.08	11	B	63	0.14	14	B	71	0.20	17	C

Table 5-13: Intersection Capacity Analysis – Sixth Line & Kaitting Trail (2033)

AM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	2	-
NBL	28	0.03	8	A	28	0.03	9	A	49	0.06	9	A
EBLR	77	0.13	11	B	82	0.16	12	B	100	0.24	15	B
PM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	2	-
NBL	53	0.05	8	A	53	0.05	9	A	106	0.11	9	A
EBLR	49	0.08	11	B	63	0.14	14	B	73	0.22	18	C

Table 5-14: Intersection Capacity Analysis – Sixth Line & Kaitting Trail (2038)

AM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	2	-
NBL	28	0.03	8	A	28	0.03	9	A	49	0.06	9	A
EBLR	77	0.13	11	B	82	0.16	12	B	100	0.24	15	B
PM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	2	-
NBL	53	0.05	8	A	53	0.05	9	A	106	0.11	9	A
EBLR	49	0.08	11	B	63	0.15	14	B	73	0.23	19	C

No capacity constraints are observed under the existing and future scenarios at the intersection of Sixth Line & Kaitting Trail, with no movements deemed critical and all experiencing LOS C or better. Site traffic is expected to have an acceptable impact on intersection operations.

5.5 KAITTING TRAIL & JANICE DRIVE

The results for the intersection capacity analysis over three future horizons for the intersection of Kaitting Trail and Janice Drive are summarized in the following tables.

Table 5-15: Intersection Capacity Analysis – Kaitting Trail & Janice Drive (2028)

AM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	2	-	-	-	1	-	-	-	1	-
EBL	5	0.01	7	A	5	0.01	7	A	5	0.01	8	A
SBLR	19	0.03	9	A	19	0.03	9	A	19	0.04	10	A
PM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	1	-
EBL	3	0.00	7	A	3	0.00	7	A	3	0.00	8	A
SBLR	7	0.01	9	A	7	0.01	10	A	7	0.01	10	A

Table 5-16: Intersection Capacity Analysis – Kaitting Trail & Janice Drive (2033)

AM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	2	-	-	-	1	-	-	-	1	-
EBL	5	0.01	7	A	5	0.01	7	A	5	0.01	8	A
SBLR	19	0.03	9	A	19	0.03	9	A	19	0.04	10	A
PM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	1	-
EBL	3	0.00	7	A	3	0.00	7	A	3	0.00	8	A
SBLR	7	0.01	9	A	7	0.01	10	A	7	0.01	10	A

Table 5-17: Intersection Capacity Analysis – Kaitting Trail & Janice Drive (2038)

AM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	2	-	-	-	1	-	-	-	1	-
EBL	5	0.01	7	A	5	0.01	7	A	5	0.01	8	A
SBLR	19	0.03	9	A	19	0.03	9	A	19	0.04	10	A
PM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	1	-	-	-	1	-	-	-	1	-
EBL	3	0.00	7	A	3	0.00	7	A	3	0.00	8	A
SBLR	7	0.01	9	A	7	0.01	10	A	7	0.01	10	A

No capacity constraints are observed under the existing and future scenarios at the intersection of Kaitting Trail & Janice Drive, with no movements deemed critical and all experiencing LOS A. Site traffic is expected to have an acceptable impact on intersection operations.

5.6 DUNDAS STREET WEST & SITE ACCESS (DUNDAS)

The results for the intersection capacity analysis over three future horizons for the future Site Access onto Dundas Street West are summarized in **Table 5-18**.

Table 5-18: Intersection Capacity Analysis – Dundas Street West & Site Access

AM PK HR	Future Total (2028)				Future Total (2033)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	0	-
SBR	25	0.07	16	C	32	0.09	16	C	32	0.09	16	C
PM PK HR	Future Total (2028)				Future Total (2033)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	0	-
SBR	14	0.08	25	D	18	0.10	26	D	18	0.10	26	D

Movements at the site access on Dundas Street West are expected to operate with LOS D or better under all horizons, maintaining available capacity to support site vehicle movements.

5.7 KAITTING TRAIL & SITE ACCESS (KAITTING)

The results for the intersection capacity analysis over three future horizons for the intersection of Kaitting Trail and the future Site Access on Kaitting Trail are summarized in **Table 5-19**.

Table 5-19: Intersection Capacity Analysis – Kaitting Trail & Site Access

AM PK HR	Future Total (2028)				Future Total (2033)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	4	-	-	-	4	-	-	-	4	-
NBLR	58	0.08	10	A	77	0.11	10	A	77	0.11	10	A
WBL	20	0.02	7	A	21	0.02	7	A	21	0.02	7	A
PM PK HR	Future Total (2028)				Future Total (2033)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	2	-	-	-	4	-	-	-	4	-
NBLR	24	0.03	10	A	43	0.06	10	A	43	0.06	10	A
WBL	37	0.03	7	A	53	0.04	7	A	53	0.04	7	A

Movements at the site access on Kaitting Trail are expected to operate with LOS A under all horizons, maintaining available capacity to support site vehicle movements.

5.8 SIXTH LINE & MUNN'S CHURCH ACCESS / SITE ACCESS (SIXTH LINE)

The results for the intersection capacity analysis over three future horizons for the intersection of Sixth Line, Munn's Church Access and the future site access on Sixth Line are summarized in the following tables.

Table 5-20: Intersection Capacity Analysis – Sixth Line & Munn's Access / Site Access (2028)

AM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	1	-
NBL	N/A								10	0.01	9	A
WBLR	12	0.03	12	B	12	0.03	13	B	16	0.04	21	C
SBL	6	0.01	8	A	6	0.01	8	A	6	0.01	8	A
EBL	N/A								9	0.05	22	C
EBR									85	0.15	11	B
PM PK HR	Existing				Future Background (2028)				Future Total (2028)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	1	-
NBL	N/A								16	0.02	9	A
WBLR	23	0.05	13	B	23	0.06	15	B	31	0.08	26	D
SBL	6	0.01	8	A	6	0.01	8	A	6	0.01	9	A
EBL	N/A								2	0.01	26	D
EBR									52	0.09	11	B

Table 5-21: Intersection Capacity Analysis – Sixth Line & Munn's Access / Site Access (2033)

AM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	2	-
NBL	N/A								9	0.01	9	A
WBLR	12	0.03	12	B	12	0.03	13	B	16	0.04	22	C
SBL	6	0.01	8	A	6	0.01	8	A	6	0.01	8	A
EBL	N/A								8	0.04	22	C
EBR									105	0.19	12	B
PM PK HR	Existing				Future Background (2033)				Future Total (2033)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	1	-
NBL	N/A								23	0.03	10	A
WBLR	23	0.05	13	B	23	0.06	15	C	31	0.09	29	D
SBL	6	0.01	8	A	6	0.01	8	A	6	0.01	9	A
EBL	N/A								4	0.03	30	D
EBR									59	0.11	12	B

Table 5-22: Intersection Capacity Analysis – Sixth Line & Munn's Access / Site Access (2038)

AM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	2	-
NBL	N/A								9	0.01	9	A
WBLR	12	0.03	12	B	12	0.03	13	B	16	0.04	22	C
SBL	6	0.01	8	A	6	0.01	8	A	6	0.01	8	A
EBL	N/A								8	0.04	22	C
EBR									105	0.19	12	B
PM PK HR	Existing				Future Background (2038)				Future Total (2038)			
Mvmt	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS	Vol	V/C	Delay (s)	LOS
OVERALL	-	-	0	-	-	-	0	-	-	-	1	-
NBL	N/A								23	0.03	10	A
WBLR	23	0.05	13	B	23	0.06	15	C	31	0.10	29	D
SBL	6	0.01	8	A	6	0.01	8	A	6	0.01	9	A
EBL	N/A								4	0.03	31	D
EBR									59	0.11	12	B

Movements at the site access on Sixth Line are expected to operate with LOS D or better under all horizons, maintaining available capacity to support site vehicle movements.

5.9 CONCLUSIONS

The analysis results indicate that the proposed development is expected to have an acceptable impact on the surrounding road network. Signal timing optimization is recommended at Dundas Street & Sixth Line to improve intersection operations; these recommended modifications are attributable to background traffic growth.

6 PARKING REVIEW

This section reviews the applicable vehicle and bicycle parking standards for the subject site.

6.1 VEHICLE PARKING REVIEW

Parking regulations for the site are governed by the North Oakville Zoning By-Law 2009-189. The requirements of Zoning By-Law 2009-189 have been reviewed and are outlined in **Table 6-1** for the interim condition.

Table 6-1: Zoning By-Law 2009-189 Vehicle Parking Standards – Interim Condition

Land Use	Units/ GLA (m^2)	Min. Parking Rate	Min. Spaces Required	Max. Parking Rate	Max. Spaces Allowable	Proposed Supply
Apartment (>4 storeys)	525	N/A	0	1.25 sp/unit	657	476
Townhome	17	1.0 sp/unit	17	3.0 sp/unit	51	
Total Residential	**542**	-	**17**	-	**708**	
Visitors – Apartment	525	N/A	0	0.2 sp/unit	105	108
Visitors – Townhome	17	N/A	0	N/A	-	
Retail	1,115	1.0 sp/30 m^2 GLA	38	1.0 sp/20 m^2 GLA	56	39
Total Non-Residential	-	-	**38**	-	-	**147**
TOTAL	-	-	**55**	-	-	**623**

Note: GLA = Gross Leasable Area, assumed to be 80% of the gross floor area for the specific retail/pharmacy uses proposed.

Under the requirements of Zoning By-law 2009-189, the interim development must provide between 17 and 708 residential parking spaces and between 38 and 56 retail parking spaces. There is no minimum or maximum for residential visitor parking due to the inclusion of townhomes on the site. The proposed development will provide 476 residential, 108 visitor parking spaces and 39 retail parking spaces, satisfying the by-law requirement.

Buildings A and B and townhome blocks 1 and 2 will share a connected underground parking garage which will contain 318 residential parking spaces and 108 visitor parking spaces.

Building C will have its own underground parking garage with 158 residential parking spaces. Visitor parking for Building C will be provided within the publicly accessible portion of the Building A/B garage.

Surrounding the interim retail block, 39 surface parking spaces will be provided for retail visitors.

The parking requirements at full buildout are shown in **Table 6-2**.

Table 6-2: Zoning By-Law 2009-189 Vehicle Parking Standards – Ultimate Condition

Land Use	Units/ GLA (m^2)	Min. Parking Rate	Min. Spaces Required	Max. Parking Rate	Max. Spaces Allowable	Proposed Supply
Apartment (>4 storeys)	665	N/A	0	1.25 sp/unit	832	639
Townhome	28	1.0 sp/unit	28	3.0 sp/unit	84	
Total Residential	**693**	-	**28**	-	**916**	
Visitors – Apartment	665	N/A	0	0.2 sp/unit	133	152
Visitor – Townhome	28	N/A	0	N/A	-	
Retail	406	1.0 sp/30 m^2 GLA	14	1.0 sp/20 m^2 GLA	21	
Total Non-Residential	-	-	**14**	-	-	
TOTAL	-	-	**42**	-	-	**791**

Note: GLA = Gross Leasable Area, assumed to equal GFA to be conservative. Specific use to be determined.

Based on the minimum parking requirements under Zoning By-law 2009-189, the full buildout development is required to provide between 28 and 916 residential parking spaces, and between 14 and

21 retail parking spaces. The proposed development will provide 639 residential parking spaces and 152 non-residential parking spaces, satisfying the zoning by-law requirements.

6.2 BICYCLE PARKING REQUIREMENTS

The Town of Oakville Zoning By-Law 2009-189 bicycle parking requirements were reviewed and applied to the proposed development. The bicycle parking requirements for the proposed residential use are summarized in **Table 6-3**. It is noted that bicycle parking requirements do not apply to townhouse buildings with fewer than 20 units.

Table 6-3: Zoning By-Law 2009-189 Bicycle Parking Standards – Interim Condition

Land Use	Units/ GFA (m^2)	Min. Bike Parking Rate	Min. Bike Spaces Required	Proposed Supply
Residential	525	0.75 sp/unit	394	200
Residential Visitors	525	0.25 sp/unit	132	
Retail	1,394	7% of automobile parking spaces, as required by the Zoning Bylaw, or 5, whichever is greater	3	
TOTAL		A maximum of 200 bicycle parking spaces shall be required.		200

Although the Zoning By-law specifies minimum bicycle parking rates by unit and by retail GFA, there is also a maximum requirement of 200 spaces for a site (Zoning By-law 2009-189, Article 5.7.iv).

Bike storage rooms will be provided in the P1 level within Building A/B and Building C to ensure secure, convenient access to active travel modes for residents. Building A/B will provide 130 bicycle parking spaces and Building C will provide 70 bicycle parking spaces in the bike room, for a total of 200 residential spaces. Therefore, the requirements of the zoning by-law will be met.

The bicycle parking requirements of the ultimate development condition are summarized in **Table 6-4**. The maximum supply of 200 spaces still applies, and this requirement will be met through the provisions included in the interim condition.

Table 6-4: Zoning By-Law 2009-189 Bicycle Parking Standards – Ultimate Condition

Land Use	Units/ GFA (m^2)	Min. Bike Parking Rate	Min. Bike Spaces Required	Proposed Supply
Residential	665	0.75 sp/unit	499	200
Residential Visitors	665	0.25 sp/unit	166	
TOTAL		A maximum of 200 bicycle parking spaces shall be required.		200

7 LOADING AND FUNCTIONAL DESIGN REVIEW

There is no minimum requirement for loading docks for residential and retail uses as per the North Oakville Zoning By-law 2009-189. However, any loading docks provided must have a minimum length of 9m.

Buildings A, C and D will each have one loading space. Building B will utilize the loading space in Building A, as the underground garages between the buildings are connected.

The retail building in the interim condition will also have a dedicated loading space. Tractor trailer trucks servicing the retail block will enter from Kaitting Trail making a westbound left turn movement, reverse into the loading space, and then exit in a forward motion via the Sixth Line driveway. Trucks will be restricted from entering/exiting via other directions through access design and signage. Truck traffic is not expected to significantly impact the neighbourhood along Katting Trail.

Swept path diagrams demonstrating vehicular and loading functionality are provided in **Appendix H.**

8 TRANSPORTATION DEMAND MANAGEMENT PLAN

Transportation Demand Management (TDM) is a set of strategies that strive towards a more efficient transportation network by influencing travel behaviour. Effective TDM measures can reduce vehicle usage and encourage residents to engage in more sustainable methods of travel. There are various opportunities to incorporate TDM measures on the subject site that will support alternative modes of transportation for future residents and visitors.

The study area generally has an auto driver mode share of 86% for residential trips and 76% for retail trips, as per the 2016 TTS. The TDM strategies discussed in the following sections are critical for reducing the auto driver mode share, achieving a balanced multi-modal transportation system in Oakville and supporting sustainable development goals. A summary of the measures proposed above is provided in **Table 8-1**, and are discussed in the following sections.

Table 8-1: Summary of Proposed Transportation Demand Management Measures

TDM Measure	Estimated Impact on SOV Reduction
1. Pedestrian and Public Realm Improvements	1%
2. Bicycle Parking Spaces 3. Bicycle Repair Station 4. Cycling Information Packages	5%
5. Connection to Transit Network 6. Transit Information Packages 7. Pre-Loaded PRESTO Cards	10%
8. On-Site PUDO Layby Area 9. Unbundled Parking	5%
Total Estimated Reduction to Site Generated SOV Trips	**21%**

As the proposed development moves through the development application process, the TDM plan will undergo further refinement.

8.1 PEDESTRIAN-BASED STRATEGIES

Pedestrian and public realm improvements

The proposed development will have main entrances oriented towards the existing sidewalks on Dundas Street West and Kaitting Trail to provide convenient links for pedestrians and transit users to access the proposed buildings.

The proposed development will contribute to an enhanced public realm through improved landscaping within the site and along adjacent streets. These changes will create a more comfortable and safe walking experience to and from the site.

Estimated Impact: It is estimated that the pedestrian-based strategies will result in a SOV reduction of 1% based on the site's safe and convenient pedestrian network which encourages people to walk to and from the site in place of driving.

8.2 CYCLING-BASED STRATEGIES

Bicycle parking spaces & bicycle repair station

The subject site will provide bicycle parking spaces to support and encourage active transportation. Bicycle parking spaces will be provided in secure, weather protected bicycle storage rooms located below ground.

Additionally, the provision of a bicycle repair station near the long-term bicycle parking spaces is recommended to provide tools on-site for minor bike repairs and encourage bicycle ownership.

The provision of bicycle parking spaces and a repair station will promote cycling to and from the site while also reducing demand for single occupancy vehicles (SOV).

Promote and increase cycling awareness

It is recommended that information packages be distributed to residents of the proposed development to help encourage active transportation and increase awareness of different travel alternatives available, particularly for short-distance trips. The packages should include information on the environmental and health benefits of cycling, rules of the road, as well as maps of the cycling infrastructure available in the surrounding area and key destinations.

Estimated Impact: It is estimated that the cycling-based strategies will result in a SOV reduction of approximately 5% based on the site's safe and convenient cycling infrastructure which encourages people to cycle to and from the site in place of driving.

8.3 TRANSIT-BASED STRATEGIES

Connection to transit network

As discussed in **Section 2.2**, the proposed development is served by several key Oakville Transit routes that link the site to the Uptown Core and other neighbourhoods in Oakville. Bus stops are located on nearby streets, including one directly adjacent to the site on Dundas Street West at Sixth Line. The availability of nearby bus services will encourage future residents, employees, and visitors of the site to use public transit.

Transit information packages

For residents to take complete advantage of the transit services surrounding the subject site, it is recommended that information packages be distributed to residents to increase transit awareness and the uptake of multi-modal transport. The information packages should contain public transit information such as route maps and timetables. In addition, Oakville Transit is now free for youth under 19 and seniors over 65, so residents should be encouraged to take advantage of the affordable services nearby.

Pre-loaded PRESTO cards

To incentivize residents to make more transit-based trips, it is recommended that pre-loaded PRESTO cards be supplied to each unit upon occupation. Supplying residents with a pre-loaded PRESTO card will promote the use of nearby transit services. By adopting transit ridership behaviour early on, residents will rely less on personal automobiles.

PRESTO cards are required at boarding, even for youth and seniors that ride for free on Oakville Transit, so the provision of cards to all units simplifies the process of obtaining a card and allows new residents to start riding immediately after moving in. PRESTO cards can also be used in other jurisdictions, including for GO Transit, MiWay (Mississauga), Burlington Transit and the Toronto Transit Commission.

Estimated Impact: It is estimated that the transit-based strategies will result in a SOV reduction of approximately 10%. This assumption is based on the site's proximity to existing local transit routes.

8.4 PARKING- AND TRAVEL-BASED STRATEGIES

On-site PUDO layby area

Pick-up and drop-off trips for rideshare vehicles, taxis and personal vehicles will be supported by the proposed development, as each apartment building will have dedicated vehicle lay-by areas located near the main entrances. The addition of the on-site lay-by area can reduce parking demand, the need for vehicle ownership and the number of SOV trips to and from the site.

Unbundled parking

The proposed development will sell parking spaces separately from units. The upfront cost of a dedicated parking spot can help discourage auto-dependency for some residents, thereby encouraging the use of other sustainable modes of transport.

Estimated Impact: It is estimated that the parking management and travel-based strategies will result in a SOV reduction of approximately 5% since it discourages vehicle ownership and encourages alternative modes of transportation in place of SOV trips including walking, cycling, transit, and rideshare trips.

8.5 SUMMARY OF TDM STRATEGIES

A preliminary cost estimate for the proposed TDM measures is provided in **Table 8-2**.

Table 8-2: TDM Cost Estimate

Recommended TDM Measure	Quantity	Unit Cost	Total Costs
Pedestrian-Based Strategies			
Pedestrian and Public Realm Improvements	N/A	Included in Site Plan	Included in Site Plan
Cycling-Based Strategies			
Bicycle Parking Spaces	200	Included in Site Plan	Included in Site Plan
Bicycle Repair Station	2	$1,000-$2500	$2,000-$5000
Cycling Information Packages	693 Units	$2.00 per unit	$1,386
Transit-Based Strategies			
Connection to Transit Network	N/A	Included in Site Plan	Included in Site Plan
Pre-Loaded PRESTO Cards	693 Units	$20 (Stored Value) $4 (Activation Fee)	$16,632
Transit Information Packages	693 Units	$2.00 per unit	$1,386
Parking Management & Travel-Based Strategies			
On-Site PUDO Layby Area	N/A	Included in Site Plan	Included in Site Plan
Unbundled Parking	N/A	Included in Site Plan	Included in Site Plan
		Total	**$21,404-$24,404**

9 CONCLUSIONS AND RECOMMENDATIONS

- The proposed four-phase development is a mixed-use condominium development with four residential towers providing 665 units, four townhouse blocks providing 28 units, and 406 m^2 of retail GFA. As an interim condition, 1,394 m^2 of retail GFA will be provided, but will ultimately be removed. The development will have three driveways from Dundas Street West, Sixth Line and Kaitting Trail.
- The analysis considered three future horizons. 2028 (interim condition), 2033 (ultimate condition), and 2038 (five-years post-buildout)
- The subject site is served by Oakville Transit, with a bus stop directly adjacent to the development along Dundas Street West. The subject site is also located near many dedicated cycling corridors and has several amenities and services located within a 20-minute walking distance.
- Vehicle trip generation was estimated for the proposed development. Under the interim condition, the site is expected to generate 248 two-way vehicle trips (69 inbound, 179 outbound) during the weekday AM peak hour and 270 two-way vehicle trips (154 inbound, 116 outbound) during the weekday PM peak hour. At full buildout, the site is expected to generate 290 two-way vehicle trips (67 inbound, 223 outbound) during the weekday AM peak hour and 300 two-way vehicle trips (174 inbound, 126 outbound) during the weekday PM peak hour.
- Under existing and future background conditions, the study area intersections operate at acceptable levels. Under future total conditions, the intersections continue to operate with no capacity constraints. The proposed site accesses are expected to operate well. Signal timing plan optimization is recommended at the intersection of Dundas Street and Sixth Line. The analysis results confirm that the proposed development will have an acceptable impact on the surrounding road network.
- The proposed parking supply has been reviewed based on the requirements of the North Oakville Zoning By-Law 2009-189. At full buildout, the proposed development will provide 639 residential parking spaces and 152 non-residential parking spaces, meeting the by-law requirements.
- The proposed bicycle parking provision, consisting of 200 secure, weather-protected bicycle parking spaces, meets the North Oakville Zoning By-Law 2009-189 requirements.
- Given the site's existing and future transportation context, daily activities can be readily accomplished without the use of a private vehicle. The proposed TDM strategies will help to reduce single-occupant vehicle (SOV) trips, consistent with the Town's transportation and sustainability objectives. TDM recommendations include the provision of bicycle parking and amenities, a communication strategy, and transit incentives. Additional details and refinement to the TDM strategy will be undertaken as the development progresses through the development application process.
- Three (3) loading spaces are proposed for the residential uses to accommodate waste collection and loading, satisfying the requirements of North Oakville Zoning By-Law 2009-189. An additional loading space will be provided in the interim condition for the retail block.