CAPREIT

TRANSPORTATION IMPACT STUDY

Proposed Residential Infill Development

1050 Markham Road
City of Toronto

June 2024

24159

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June 10, 2024

Reference Number: 24159

Shawni Lo
Director of Development
CAPREIT
11 Church Street
Toronto, ON
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Dear Shawni Lo,

RE: Transportation Impact Study
Proposed Residential Infill Development
1050 Markham Road, City of Toronto

LEA Consulting Ltd. (LEA) is pleased to present the findings of our Transportation Impact Study for the proposed residential infill development located at 1050 Markham Road in the City of Toronto. This study has been prepared in support of the Zoning By-law Amendment (ZBA) application for the subject site.

This report concludes that the proposed development is expected to have an acceptable impact on the road network operations in the surrounding area. The study also includes a review of the proposed vehicle parking, bicycle parking and loading provisions with regard to the applicable zoning requirements. A Transportation Demand Management plan and Toronto Green Standards review are also included.

Should you have any questions regarding this Transportation Impact Study, please do not hesitate to contact the undersigned.

Yours truly,

LEA CONSULTING LTD.

Nixon Chan, M.A.Sc., P.Eng., PTOE, PMP
Vice President, Transportation Engineering

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Project Manager, Transportation Engineering

Encl. Transportation Impact Study – 1050 Markham Road, Proposed Residential Infill Development, City of Toronto (June 2024)

Disclaimer

This Report represents the work of LEA Consulting Ltd ("LEA"). This Report may not be relied upon for detailed implementation or any other purpose not specifically identified within this Report. This Document is confidential and prepared solely for the use of CAPREIT. Neither LEA, its sub-consultants nor their respective employees assume any liability for any reason, including, but not limited to, negligence, to any party other than CAPREIT for any information or representation herein.

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1 INTRODUCTION

LEA Consulting Ltd. (LEA) was retained by CAPREIT to undertake a Transportation Impact Study (TIS) for the proposed residential infill development located at 1050 Markham Road in the City of Toronto (herein referred to as the "subject site"). The following TIS has been prepared in support of the Zoning By-law Amendment (ZBA) Application for the proposed development. The subject site is currently occupied by a 19-storey residential building, consisting of 295 residential units. CAPREIT is seeking to intensify the southern portion of the site. The subject site location is illustrated in **Figure 1-1**.

Figure 1-1: Subject Site Location

Source: Google Maps, Accessed March 2023

The purpose of this assessment is to review the existing transportation infrastructure in the surrounding area, including the road network, transit network and active transportation network, and assess the traffic impact of the proposed infill development on the network. In addition, the proposed parking and loading provisions will be reviewed, and Transportation Demand Management (TDM) measures will be recommended to encourage the use of other modes of transportation, which aligns with the City of Toronto Official Plan objectives and Toronto Green Standards.

1.1 PROPOSED DEVELOPMENT

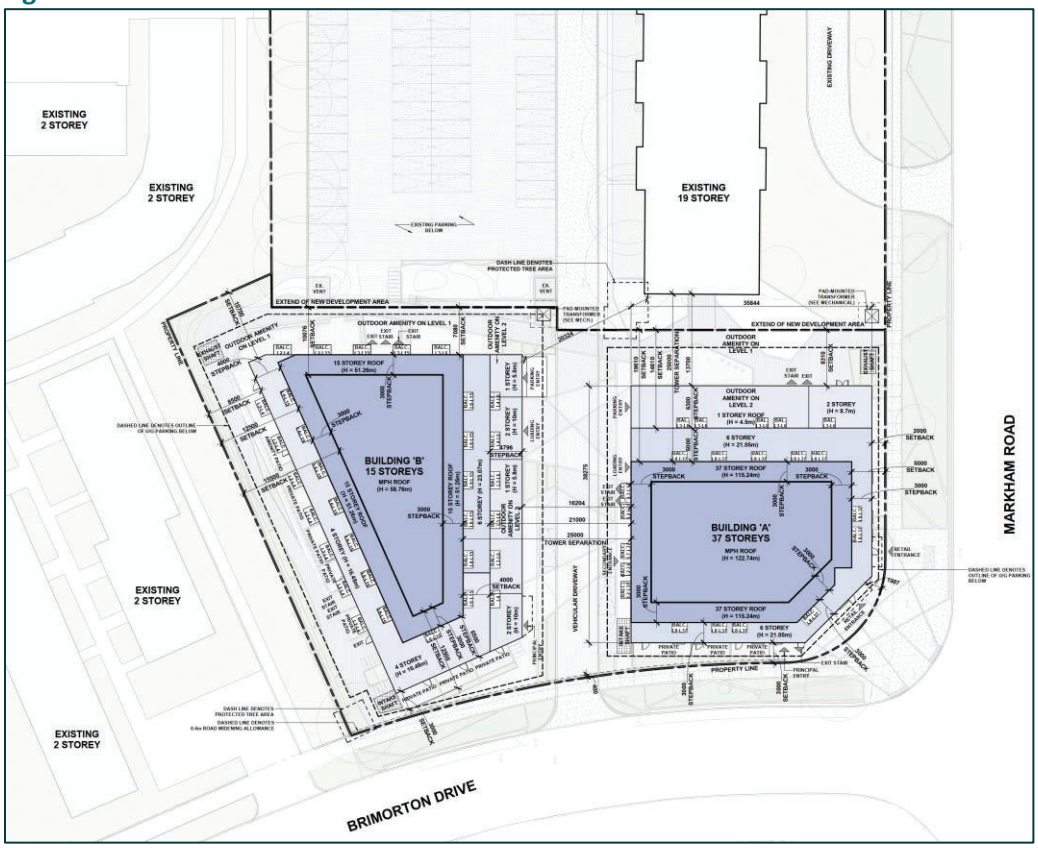
The development proposal includes the addition of one (1) 37-storey residential building and one (1) 15-storey residential building on the southern portion of the property, while retaining the existing 19-storey apartment building. A total of 635 units are proposed, with a detailed breakdown provided in **Table 1-1.**

Table 1-1: Site Statistics

Building	Land Use	Unit Count
A	Residential	438 Units
	1-Bedroom	304 Units
	2-Bedroom	89 Units
	3-Bedroom	45 Units
B	Residential	197 Units
	1-Bedroom	146 Units
	2-Bedroom	32 Units
	3-Bedroom	19 Units

Access to the development is proposed via the existing unsignalized intersection along Brimorton Drive. The internal driveway will provide vehicular access to the existing surface parking at the north of the development and the underground parking for Building A and B, as well as the existing underground parking at the north of the development (through Building B). A pick-up and drop-off area is provided for each building along the internal driveway. The proposed site plan is illustrated in **Figure 1-2.**

Figure 1-2: Site Plan



Source: Wallman Architects, June 2024

2 EXISTING TRAFFIC CONDITIONS

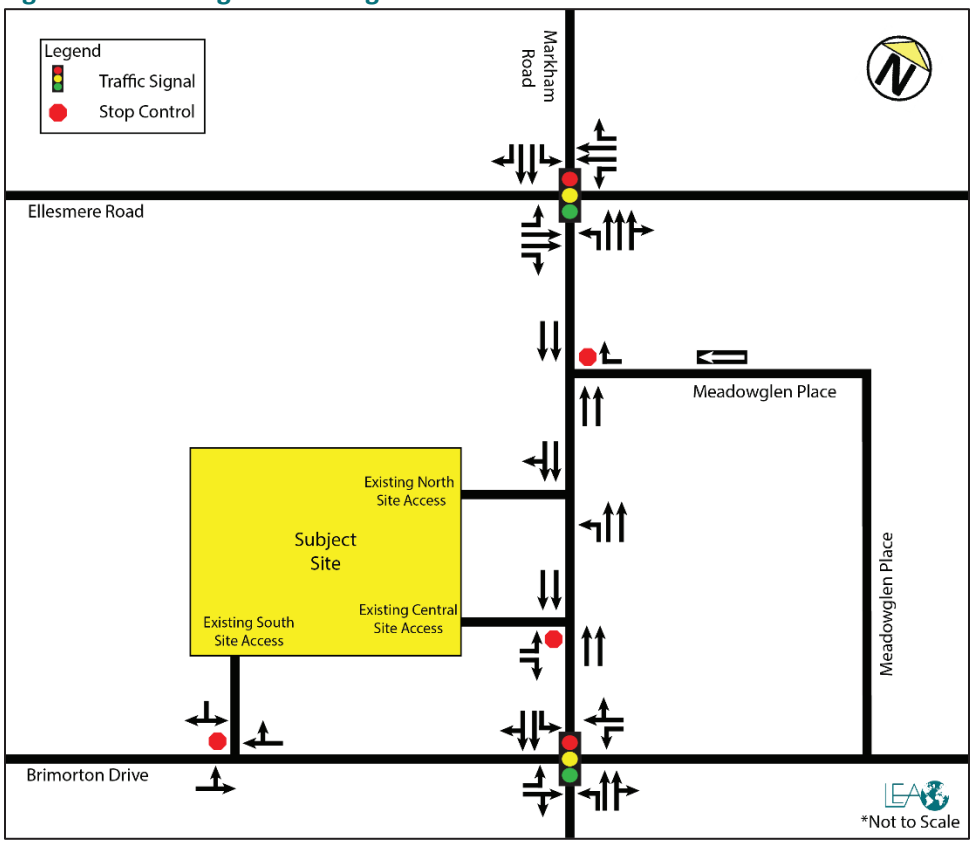
This section identifies the existing traffic conditions present in the study area, including the road, transit, cyclist, and pedestrian networks. The study area was determined by assessing the size of the proposed development and its anticipated traffic impact. The terms of reference and correspondence with the City is included in **Appendix A**. The study area includes the following intersections:

- Markham Road and Ellesmere Road (Signalized);
- Markham Road and Meadowglen Place (Unsignalized);
- Markham Road and Brimorton Drive (Signalized);
- Markham Road and Existing North Site Access (Unsignalized);
- Markham Road and Existing Central Site Access (Unsignalized); and
- Brimorton Drive and Existing South Site Access (Unsignalized).

2.1 EXISTING ROAD NETWORK

This section will describe the road network within the above-mentioned study area. The existing intersection controls and lane configuration are illustrated in **Figure 2-1**. All roadways within the study area are under the jurisdiction of the City of Toronto.

Figure 2-1: Existing Lane Configuration



Markham Road is a north-south major arterial roadway with a four-lane cross-section (two lanes in each direction). Markham Road operates with a posted speed limit of 50 km/hr. It provides exclusive left-turn lanes at all signalized intersections in the study area.

Ellesmere Road is an east-west major arterial roadway with a four-lane cross-section (two lanes in each direction). Ellesmere Road operates with a posted speed limit of 50 km/hr. It provides exclusive left-turn lanes at the Markham Road intersection and operates under the traffic control signal system.

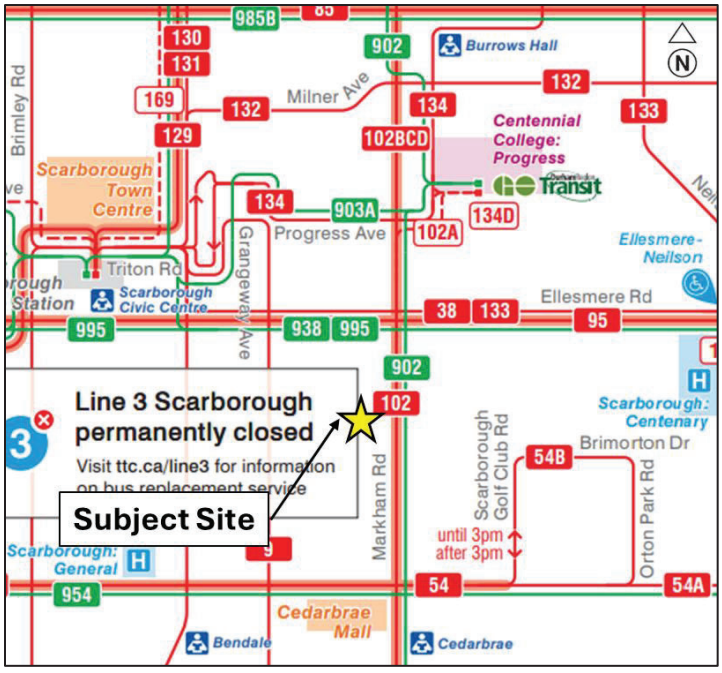
Brimorton Drive is an east-west collector roadway with a two-lane cross-section (one lane in each direction). Brimorton Drive operates with a posted speed limit of 50 km/hr. It provides exclusive left-turn lanes at the Markham Road intersection and operates under the traffic control signal system.

Meadowglen Place is a local roadway, that operates generally in an east-west direction, and operates one-way in the westbound direction with the intersection of Markham Road. East of Markham Road, the roadway operates in a two-way north-south direction with a two-lane cross-section (one lane in each direction). As no speed limit it posted, Meadowglen Place operates with an assumed speed limit of 50 km/hr.

2.2 EXISTING TRANSIT NETWORK

The subject site is located in an area well-serviced by the Toronto Transit Commission (TTC) transit network. The subject site is within walkable distance of bus stops along Markham Road, with the closest stop located at the intersection of Markham Road and Brimorton Drive. Transit routes servicing the area are illustrated in **Figure 2-2**.

Figure 2-2: Existing Transit Network



Source: Toronto Transit Commission, Accessed May 2024

TTC Route 38 – Highland Creek is a bus route that operates generally in an east-west direction, primarily along Ellesmere Road between Scarborough Centre Station and Rouge Hill GO Station, providing connections to higher-order transit services. Route 38 operates all-day, every day with headways of approximately 12-13 minutes. Accessible service and bike racks are provided on this route.

Access Location: Route 38 is accessible in the study area at the Markham Road & Ellesmere Road intersection, approximately 250 m (or a 3-minute walk) from the subject site.

TTC Route 95 – York Mills is a bus route that operates generally in an east-west direction, primarily along Ellesmere Road between York Mills Station and Kingston Road. Route 95 is part of the 10-Minute Network and operates 10-minutes or better all-day, every day. Accessible service and bike racks are provided on this route.

Access Location: Route 95 is accessible in the study area at the Markham Road & Ellesmere Road intersection, approximately 250 m (or a 3-minute walk) from the subject site.

TTC Route 102 – Markham Road is a bus route that operates generally in a north-south direction, primarily along Markham Road between Warden Station and Progress (Centennial College). Route 102 is part of the 10-Minute Network and operates 10-minutes or better all-day, every day. Accessible service and bike racks are provided on this route.

Access Location: Route 102 is accessible in the study area at the Markham Road & Brimorton Drive intersection, approximately 100 m (or a 1-minute walk) from the subject site.

TTC Route 133 – Neilson is a bus route that operates generally in a east-west direction, primarily along Ellesmere Road between Scarborough Centre Station and Morningside Heights. Route 133 operates all-day, every day with headways of approximately 10-minutes. Accessible service and bike racks are provided on this route.

Access Locations: Route 133 is accessible in the study area at the Markham Road & Ellesmere Road intersection, approximately 250 m (or a 3-minute walk) from the subject site.

TTC Route 902 – Markham Road Express is a bus route that operates generally in a north-south direction, primarily along Markham Road between Warden Station and Sheppard Avenue via Centennial College Express. Route 902 operates Monday to Friday during the morning and afternoon peak periods and midday periods with 10-minute headways during peak hours. Accessible service and bike racks are provided on this route.

Access Locations: Route 902 is accessible in the study area at the Markham Road and Brimorton Drive intersection, approximately 100 m (or a 1-minute walk) from the subject site.

TTC Route 995 – York Mills is a bus route that operates generally in an east-west direction, primarily along Ellesmere Road between York Mills Station and UofT Scarborough Express. Route 995 operates Monday to Friday during the morning and afternoon peak periods and midday periods with 10-minute headways during peak hours. Accessible service and bike racks are provided on this route.

Access Locations: Route 995 is accessible in the study area at the Markham Road and Ellesmere Road intersection, approximately 250 m (or a 3-minute walk) from the subject site.

2.3 EXISTING CYCLING NETWORK

The existing cycling network surrounding the site is illustrated in **Figure 2-3**. The subject site is located in a neighbourhood with some access to nearby cycling infrastructure. A bike lane is provided along Brimorton Drive. In addition, an in-boulevard multi-use trail is provided along Ellesmere Road which connects to the Gatineau Hydro Corridor Trail, which acts as a linkage to other routes nearby.

Figure 2-3: Existing Cycling Network

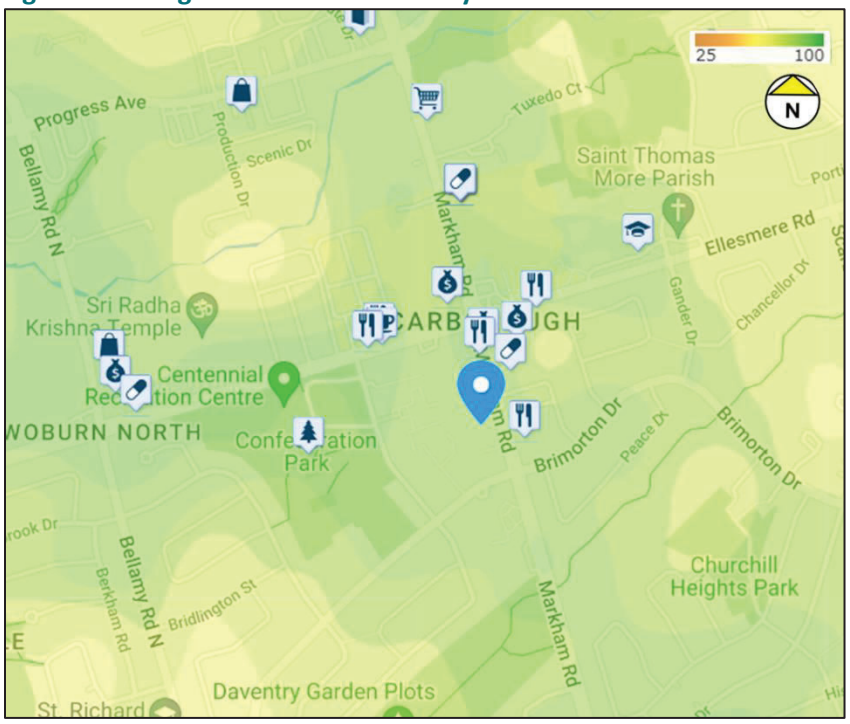
Source: City of Toronto, accessed May 2024

2.4 EXISTING PEDESTRIAN NETWORK

The subject site is located within a well-established pedestrian network. Ellesmere Road and Markham Road have continuous sidewalks present along both sides of the road with bus stops at the intersection of Ellesmere Road and Markham Road. A multi-use path is also provided along Ellesmere Road, east of Markham Road and provides connections to the Gatineau Hydro Corridor multi-use trail. Similarly, Brimorton Drive provides continuous sidewalks and bike lanes along both sides of the road with north-south bus stops at the intersection with Markham Road. A sidewalk is provided along the south side of Meadowglen Place at the intersection of Markham Road.

As a testament to the subject site's walkability, the site receives a WalkScore of 80/100, or "Very Walkable", when entered into the WalkScore application. This indicates that most daily errands can be accomplished without a vehicle. As shown in **Figure 2-4**, a 10-minute walk from the subject site could permit an individual to reach Progress Avenue to the north, Pandora Circle to the south, Bellamy Road North to the west, and Scarborough Golf Club Road to the east. Within this area are amenities and services such as restaurants, retail stores, banks, and pharmacies, creating a pedestrian-friendly environment.

Figure 2-4: Neighbourhood Walkability



Source: Walkscore.com, accessed May 2024

2.5 TRAFFIC DATA COLLECTION

Turning movement counts (TMCs) were used as the source of traffic data in the intersection capacity analysis. Traffic counts were collected by LEA on February 1, 2024 at 7:00-9:30 AM and 4:00-6:30 PM to capture the weekday AM and PM peak periods.

Signal timing plans (STP) at the signalized intersections were obtained from the City of Toronto. A summary of the TMC data collected is outlined in **Table 2-1**, with detailed traffic counts and signal timing plans available in **Appendix B**.

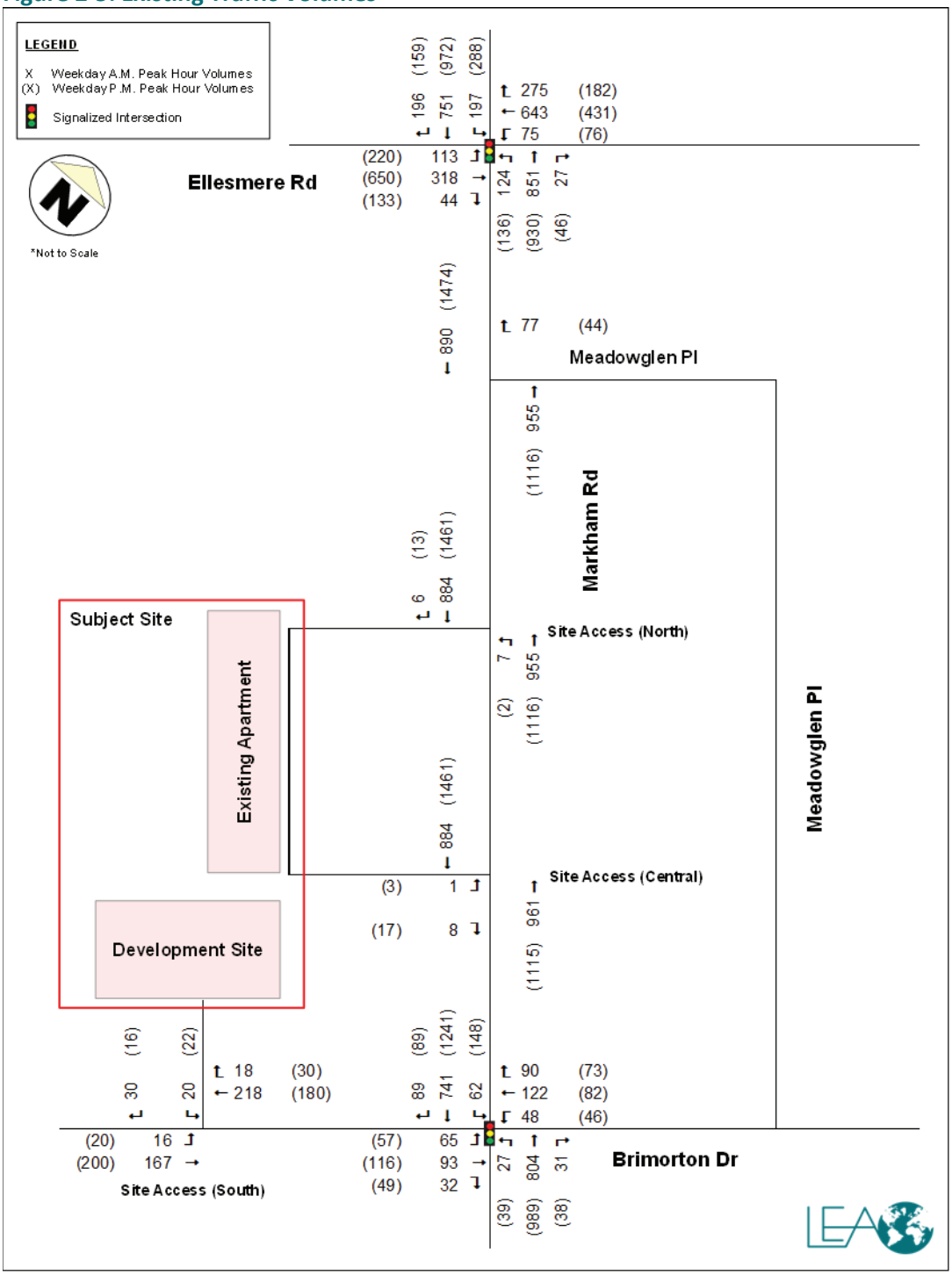
Table 2-1: Traffic Data Summary

Intersection	TMC Date	Source
Markham Rd & Ellesmere Rd	Thursday, February 1, 2024	LEA
Markham Rd & Meadowglen Pl		
Markham Rd & North Site Access		
Markham Rd & Central Site Access		
Markham Rd & Brimorton Dr		
Brimorton Dr & South Site Access		

2.6 EXISTING TRAFFIC VOLUMES

The existing traffic volumes during the weekday AM and PM peak hours are illustrated in **Figure 2-5.**

Figure 2-5: Existing Traffic Volumes



3 FUTURE BACKGROUND TRAFFIC CONDITIONS

For the analysis of future background traffic conditions, this study considers a 5-year horizon from the existing year 2024 to the future year 2029. Future background conditions include traffic added to the network from other future developments, corridor growth and considers overall improvements to the transportation network. The future background conditions will be used as the baseline for evaluating the impact of the proposed development.

3.1 FUTURE TRANSIT IMPROVEMENTS

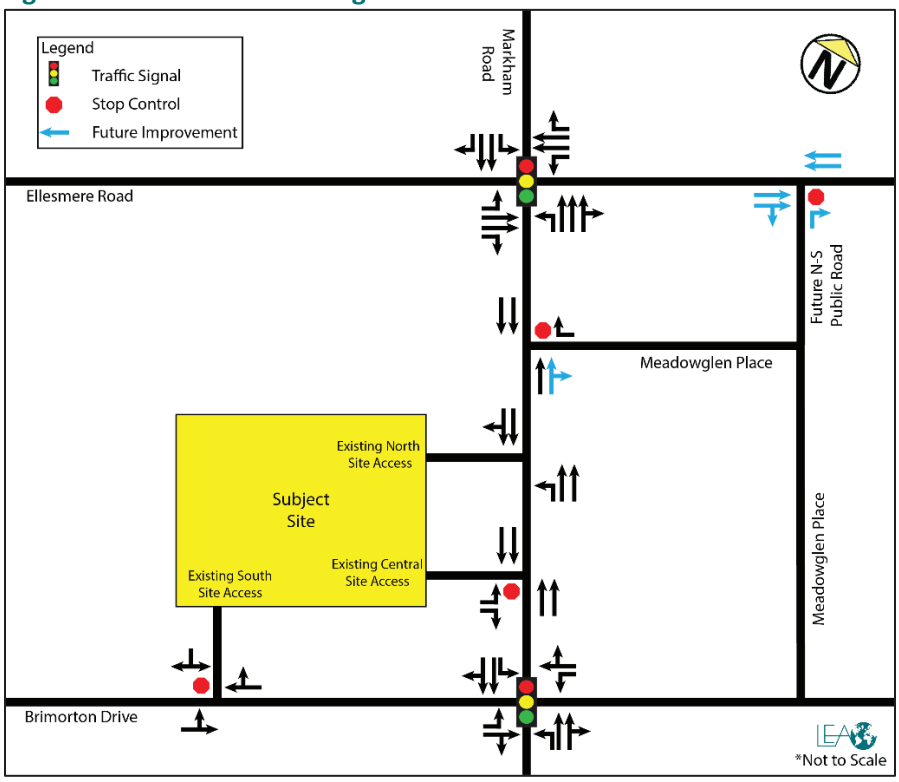
The proposed Durham-Scarborough BRT (DSBRT) line consists of 36 kilometres of bus rapid transit that would serve Oshawa, Whitby, Ajax, Pickering and Scarborough. The route is proposed to run along Ellesmere Road which is within the vicinity of the subject site. Preliminary information provided by Metrolinx indicates the works include a stop at Markham Road and improved cycle and sidewalk infrastructure.

As the timeline of the project is unknown, the project is not assumed to be implemented by the future horizon years. As such, no changes to the lane configurations have been noted at this time.

3.2 FUTURE ROAD IMPROVEMENTS

Based on correspondence with City Staff, it is understood that a new public road will be established from Meadowglen Place to Ellesmere Road. Additionally, the intersection configuration at Meadowglen Place and Markham Road will be changed to right-in/right-out. As such, this intersection will be included as part of the future analysis. **Figure 3-1** illustrates the future lane configuration.

Figure 3-1: Future Lane Configuration



3.3 CORRIDOR GROWTH

Historical counts were obtained from 2014, 2016, and 2024 at the intersection of Markham Road and Ellesmere Road. It is noted that a negative growth rate was observed from the historical counts. Therefore, no corridor growth rates were applied to the study area. Detailed corridor growth rates are provided in **Appendix C**.

3.4 BACKGROUND DEVELOPMENTS

Five (5) background developments were included in the future background analysis as per the City of Toronto's Development Application Portal and confirmed with the City through Terms of Reference. The background developments are summarized in **Table 3-1**. Excerpts from the studies providing details of the background development trips are provided in **Appendix D**.

Table 3-1: Background Developments

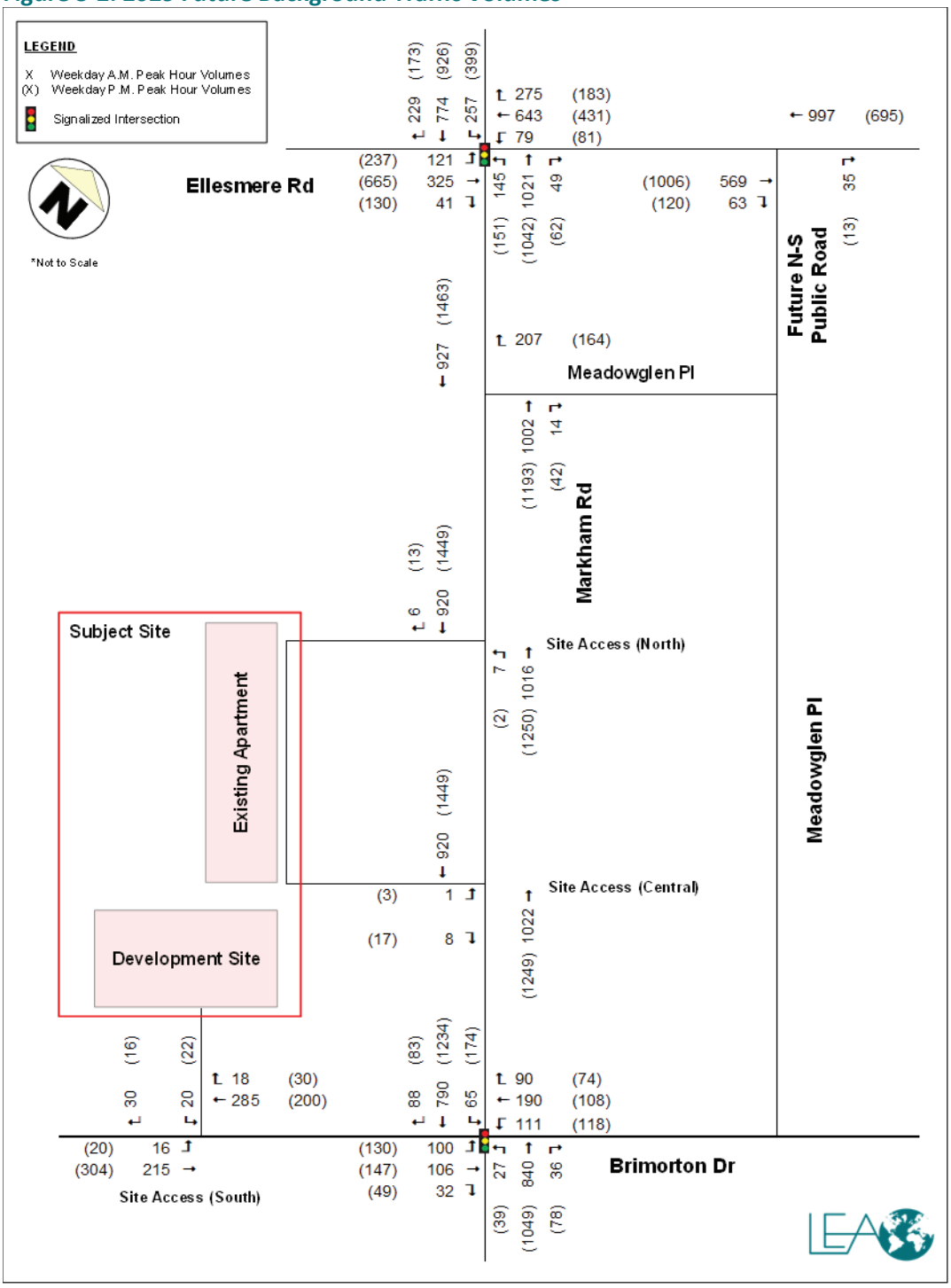
#	Location	Proposed Development	Source of Traffic Volumes
1	1021-1035 Markham Road	331 residential units; 2,125.1 m^2 retail GFA	TIS dated October 2019 (Figure 18) BA Group
2	1125-1137 Markham Road / 2141 Ellesmere Road	997 residential units; 960 m^2 commercial GFA	TIS dated July 2022 (Figure 4-3) LEA
3	1151 Markham Road	440 residential units; 223 m^2 retail GFA	Transportation Addendum Letter dated August 2023 (Net Site Traffic Figure) LEA
4	1221 Markham Road	879 residential units; 865.4 m^2 retail GFA	TIS dated May 2021 (Figures 15 & 16) HDR
5	1-2 Meadowglen Place*	820 residential units; 1,080 m^2 retail GFA	TIS dated August 2011 (Figures E8 & E10) BA Group

**Note: Some of the development at 1-2 Meadowglen place has been constructed at the time of the survey counts. As the occupancy and built unit count at the time are unknown, the full site trip forecast has been included in the future background volumes to be conservative; however, it should be noted this may be double counting some of the trips.*

3.5 FUTURE BACKGROUND TRAFFIC VOLUMES

The future background traffic volumes for the weekday AM and PM peak hours under the 2029 horizon year are illustrated in **Figure 3-2**.

Figure 3-2: 2029 Future Background Traffic Volumes



4 SITE GENERATED TRAFFIC

The proposed development consists of two (2) residential infill buildings consisting of 37- and 15-storeys, respectively, for a total of 635 units on the southern portion of the property. Access to the development is proposed the existing unsignalized access along Brimorton Drive. The sections below discuss the calculation, distribution, and assignment of site-generated vehicle trips.

4.1 MODE SPLIT

Data from the 2016 Transportation Tomorrow Survey (TTS) was extracted to identify the modal split of trips from the study are (TAZ 491-494, 496 and 497) for home-based trips. The modal split is summarized in **Table 4-1.** Detailed TTS data is provided in **Appendix E**.

Table 4-1: Mode Splits

Mode	Split
Auto Driver	40%
Auto Passenger	12%
Transit	40%
Walk	8%
Cycle	0%
Total	100%

4.2 TRIP GENERATION

Trip generation for the proposed development was estimated using the observed trip generation rates at the existing building located at 1050 Markham Road. It is noted that the existing 19-storey residential building consists of 295 units. **Table 4-2** summarizes the existing trip generation rates and **Table 4-3** summarizes the trip generation of the proposed development**.**

Table 4-2: Trip Generation Rates – Existing Residential Use

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Existing Building 295 Units	Survey (Trips)	34	50	84	50	38	88
	Trip Rates (Veh/unit)	0.12	0.17	0.29	0.17	0.13	0.30

Table 4-3: Trip Generation - Proposed Residential Use

Land Use	Description	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Proposed Building 635 Units	Trip Rates (Veh/unit)	0.12	0.17	0.29	0.17	0.13	0.30
	Auto Trips	76	108	184	108	83	191

The proposed development is anticipated to generate an additional 184 two-way vehicle trips during the AM peak hour (76 inbound, 108 outbound) and 191 two-way vehicle trips during the PM peak hour (108 inbound, 83 outbound).

4.2.1 Multi-Modal Trip Generation

The multi-modal trip generation is summarized in **Table 4-4** and is based on the modal split identified in **Section 4.1.**

Table 4-4: Multi-Modal Trip Generation

Land Use	Description	Modal Split	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
Residential	External Person Trips	100%	190	270	460	270	208	478
	Auto Driver Trips	40%	76	108	184	108	83	191
	Passenger Trip	12%	23	32	55	32	25	57
	Transit Trips	40%	76	108	184	108	83	191
	Pedestrian Trips	8%	15	22	37	22	17	39
	Cycling Trips	0%	0	0	0	0	0	0

4.3 TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution of site traffic was estimated using Transportation Tomorrow Survey (TTS) 2016 data. The trip purposes in the TTS data were filtered for home-based trips during the AM and PM peak periods for TAZ 491-494, 496 and 497. Site traffic was assigned to the road network based on trip patterns in the study area, logical routing, turning restriction and the location and configuration of the site accesses. The trip distribution for the proposed development is outlined in **Table 4-5**. Detailed TTS calculations are provided in **Appendix F**.

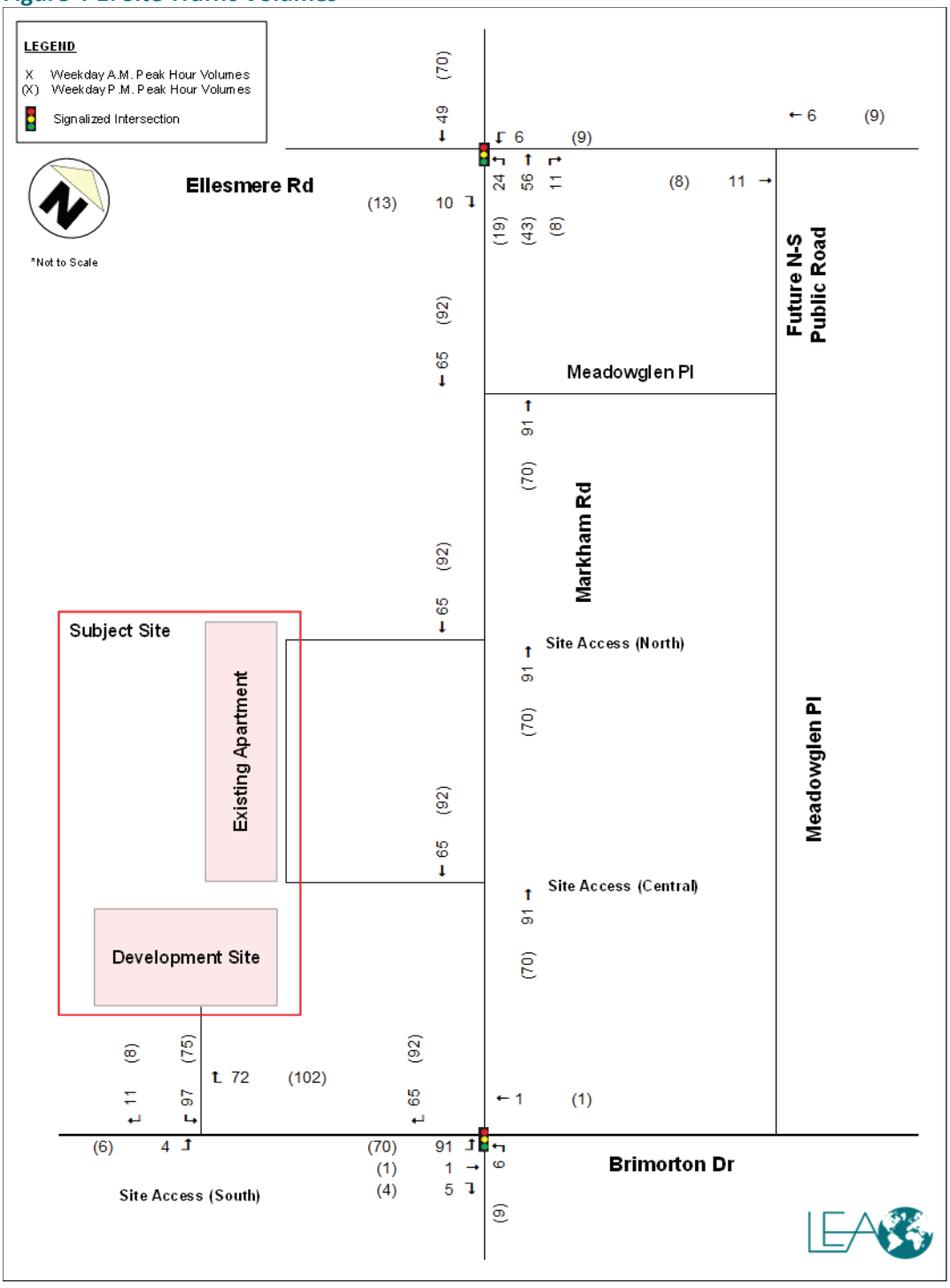
Table 4-5: Site Trip Distribution

Direction From/To	Expected Route	Weekday AM/PM Peak Hour	
		In	Out
N	Markham Road	65%	52%
S	Markham Road	8%	5%
E	Brimorton Drive	1%	1%
	Ellesmere Road	8%	10%
W	Brimorton Drive	6%	10%
	Ellesmere Road	12%	22%
Total		100%	100%

Note: Higher percentages observed for northbound trips due to Highway 401 on/off ramp being located north of Markham Rd & Ellesmere Rd

The site traffic volumes for the weekday AM and PM peak hours is illustrated in **Figure 4-1.**

Figure 4-1: Site Traffic Volumes



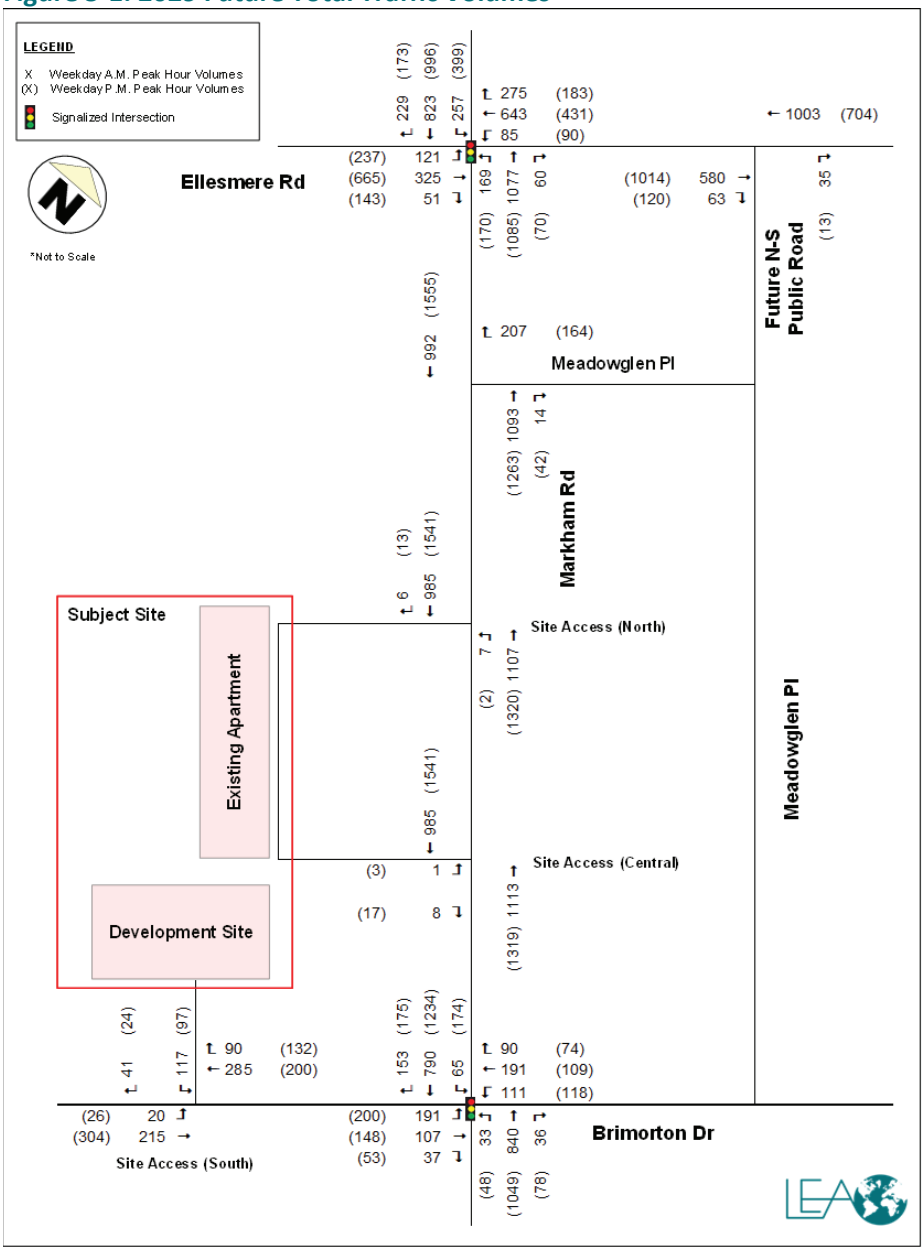
5 FUTURE TOTAL TRAFFIC CONDITIONS

Future total traffic conditions include the addition of site trips to the 2029 future background volumes. As previously mentioned, the site will be accessed from the existing unsignalized access on Brimorton Drive. No changes have been made between the future background scenario and the future total scenario (**Figure 3-1**).

5.1 FUTURE TOTAL TRAFFIC VOLUMES

The future total traffic volumes for the weekday AM and PM peak hours during the 2029 horizon year are illustrated in **Figure 5-1**.

Figure 5-1: 2029 Future Total Traffic Volumes



6 INTERSECTION CAPACITY ANALYSIS

The intersection capacity analysis was undertaken using Synchro 11.0, which is based on the Highway Capacity Manual (2000) methodology and adheres to the City of Toronto Guidelines for the Preparation of Transportation Impact Studies (2013). As per the guidelines, key movements of interest are those with a Level of Service (LOS) E or worse or a Volume-to-Capacity (V/C) ratio greater than 0.85 for through and right movements and a V/C greater than 0.9 for dedicated left-turn movements.

The sections below outline a comparison of the capacity analysis results under existing, future background and future total conditions. Detailed capacity results are provided in the following appendices:

- **Appendix G:** Existing Intersection Capacity Analysis;
- **Appendix H:** 2029 Future Background Intersection Capacity Analysis; and
- **Appendix I:** 2029 Future Total Intersection Capacity Analysis.

6.1 SYNCHRO MODEL INPUTS AND ASSUMPTIONS

The following sub-sections outline the network assumptions and changes applied to the Synchro models in the existing, future background and future total scenarios.

6.1.1 Road Network Assumptions

As noted in **Section 3.2**, a new North-South road will be established from Meadowglen Place to Ellesmere Road. The existing intersection control at Markham Road and Meadowglen Place will be converted to a right-in/right-out access. These changes have been reflected in the future background 2029 horizon year. The remaining road network is assumed to be the same.

6.1.2 Synchro Calibrations/Parameters

6.1.2.1 Existing Conditions Synchro Model Inputs

Existing traffic operations were assessed to provide a baseline for future traffic operations. The existing analysis incorporates the most recent signal timing plans for the study intersections. The applied Peak Hour Factor (PHF) values were calculated based on the surveyed counts.

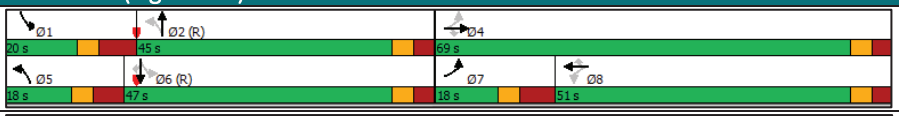
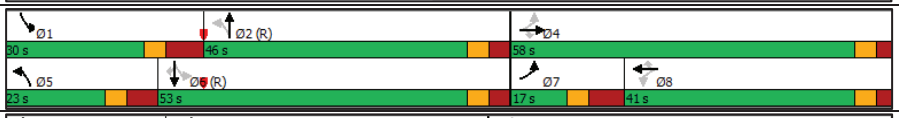
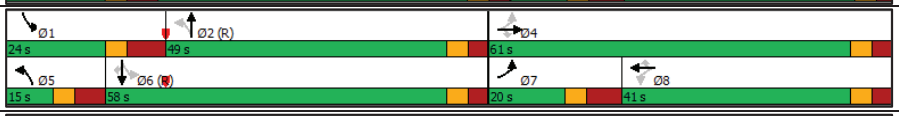
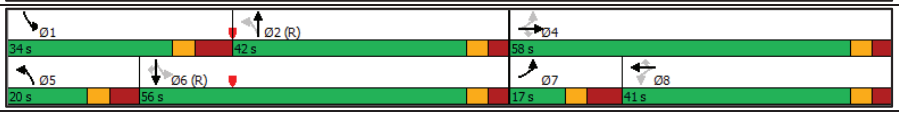
6.1.2.2 Future Background and Future Total Synchro Model Inputs

Input parameters from the existing conditions were maintained with the corresponding future background and future total volumes.

6.1.3 Signal Timing Modifications

Signal optimization was conducted at the intersection of Markham Road and Ellesmere Road and the intersection of Markham Road and Brimorton Drive under future background and total conditions. The existing cycle length was maintained for each peak hour. A summary of the recommended changes for each intersection is provided in **Table 6-1** and **Table 6-2.**

Table 6-1: Proposed Signal Timing Plan at Markham Road and Ellesmere Road

Markham Road & Ellesmere Road (Signalized)		
AM Peak	Existing STP	
	Proposed STP	
PM Peak	Existing STP	
	Proposed STP	

The southbound left and northbound left phases were extended for the AM and PM peak hours while maintaining the same cycle length to address southbound left volumes.

Table 6-2: Proposed Signal Timing Plan at Markham Road and Brimorton Drive

Markham Road & Brimorton Drive (Signalized)		
AM Peak	Existing STP	
	Proposed STP	
PM Peak	Existing STP	
	Proposed STP	

The eastbound through and westbound through phases were extended for the AM and PM peak hours while maintaining the same cycle length to address the eastbound left volumes. Of note, an addition of a protected eastbound left phase was not considered due to the STP having a leading pedestrian interval (LPI) phase.

6.2 SIGNALIZED INTERSECTIONS

The results for the studied signalized intersections under each traffic scenario during the weekday AM and PM peak hours are summarized in the sections below. Of note, only movements of interest are shown. As per the guidelines, key movements of interest are those with a Level of Service (LOS) E or worse or a Volume-to-Capacity (V/C) ratio greater than 0.85 for through and right movements and a V/C greater than 0.9 for dedicated left-turn movements. If a movement was identified as critical in any scenario, the v/c ratios were included for all conditions for comparison purposes.

6.2.1 Markham Road and Ellesmere Road

The intersection capacity analysis results at Markham Road and Ellesmere Road during the AM and PM peak hours are summarized in **Table 6-3** and the queue analysis is summarized in **Table 6-4**. Of note, only movements of interest are shown.

Table 6-3: Intersection Capacity Analysis - Markham Road & Ellesmere Road

Mvmt	Existing Traffic				Future Background Traffic (Optimized)				Future Total Traffic (Optimized)			
	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
AM Peak Hour												
Overall	-	0.72	D (39)	-/-	-	0.82	D (41)	-/-	-	0.83	D (42)	-/-
SBL	197	0.86	E (56)	36/79	257	0.84	D (52)	53/98	257	0.86	E (59)	57/105
PM Peak Hour												
Overall	-	0.99	D (43)	-/-	-	**1.10**	D (52)	-/-	-	**1.10**	D (54)	-/-
EBL	220	0.75	D (38)	45/77	237	0.91	E (68)	51/106	237	0.91	E (68)	51/106
WBL	76	0.50	D (52)	19/38	81	0.53	D (54)	21/41	90	0.60	E (58)	23/46
NBTR	976	0.65	D (41)	90/107	1104	0.88	E (56)	115/134	1155	0.93	E (60)	122/150
SBL	288	**1.08**	**F (110)**	74/135	399	**1.13**	**F (129)**	124/192	399	**1.13**	**F (130)**	124/192

Table 6-4: Markham Road and Ellesmere Road Queues

Mvmt	Existing Traffic			Future Background Traffic (Optimized)			Future Total Traffic (Optimized)		
	Storage	50th Queue	95th Queue	Storage	50th Queue	95th Queue	Storage	50th Queue	95th Queue
AM Peak Hour									
EBL	50	18	31	50	23	38	50	23	38
EBR	55	0	0	55	0	0	55	0	2
WBL	30	16	30	30	18	35	30	20	38
WBR	20	26	57	20	29	64	20	29	64
NBL	75	21	36	75	21	35	75	25	40
SBL	46	36	79	46	53	98	46	57	105
PM Peak Hour									
EBL	50	45	77	50	51	106	50	51	106
EBR	55	0	14	55	0	9	55	0	12
WBL	30	19	38	30	21	41	30	23	46
WBR	20	7	31	20	0	10	20	0	10
NBL	75	22	54	75	23	43	75	30	70
SBL	46	74	135	46	124	192	46	124	192

Existing Conditions: Under existing conditions, the intersection operates at capacity with overall v/c ratios below 1.00 with LOS D or better during both weekday AM and PM peak hours. The southbound left movement is identified as a critical movement during both peak hours – of note, the movement operates with a v/c ratio

above 1.00 and LOS F during the PM peak hour, with the overages in vehicle capacity likely absorbed by the two-way left turn lane immediately following the storage lane for the movement. Delays are expected to clear within the cycle length.

Future Background Conditions: Under future background conditions with signal optimization applied, the intersection is projected to operate with capacity constraints during the PM peak hour with the overall v/c ratio above 1.00 with LOS D. The southbound left movement is anticipated to experience further capacity constraints due to background development volumes being added to the movement. The eastbound left and northbound through/right movements were also identified as critical movements during the weekday PM peak hour with LOS E but are deemed acceptable due to v/c ratios for the movements remaining below 1.00. No other critical movements were identified during the AM and PM peak hours.

It is recommended that the City consider extending the cycle length for the signal timing plan at the intersection to address the projected capacity issues for the southbound left movement.

Future Total Conditions: Under future total conditions, the intersection is expected to continue experiencing capacity constraints noted under future background conditions during the PM peak hour. Of note, the southbound left movement will continue operating with capacity constraints with v/c ratio remaining above 1.00 with LOS F due to background development volumes. In addition to the eastbound left, northbound through/right, and southbound left movements as identified under future background conditions, the westbound left movement is identified as a critical movement during the weekday PM peak hour with LOS E. However, this is deemed acceptable as the v/c ratio for the movement is below 1.00. Likewise, the southbound left movement is found to operate with LOS E during the weekday AM peak hour but is considered acceptable due to its v/c ratio remaining below 1.00. No other critical movements were identified.

Queue Analysis: Based on analysis results, 50th percentile queue lengths for the eastbound left, westbound right, and southbound left movements are projected to exceed the existing storage lane lengths for their respective movements. However, it should be noted that for the eastbound left movement, the queue length is expected to exceed the existing storage lane length by 1m, which is less than the length of a vehicle and is therefore believed to be containable within the storage lane available.

The westbound right movement is expected to have queue lengths exceed the available storage by 9m during the AM peak hour due to background development traffic being added into the movement. While the overages in queue lengths for the westbound right movement during the AM peak hour is expected to affect the westbound through movement, the overage of 9m is expected to be mostly accommodable through the taper, which is anticipated to minimize disruptions on the movement. Queues on the westbound right movement are not expected to interfere with other movements in the intersection nor movements in other intersections or driveways.

50th percentile queue lengths for the southbound left movement are projected to exceed the available storage length by up to 78m. As noted under intersection capacity analysis, this is primarily due to background development traffic being added into the movement. The overages are expected to affect the southbound through movement at the intersection, although the extent of disruptions will likely be partially mitigated by queues extending into the two-way left turn lane that immediately follows the storage lane. Additionally, queues generated by the movement are expected to affect certain entry and exit movements from adjacent driveways. It is recommended that the City consider extending the cycle length for the signal timing plan at the intersection to address the projected capacity issues for the southbound left movement.

No other constraints were identified.

6.2.2 Markham Road and Brimorton Drive

The intersection capacity analysis results at Markham Road and Brimorton Drive during the AM and PM peak hours are summarized in **Table 6-5** and the queue analysis is summarized in **Table 6-6**. Of note, only movements of interest are shown.

Table 6-5: Intersection Capacity Analysis - Markham Road & Brimorton Drive

Mvmt	Existing Traffic				Future Background Traffic (Optimized)				Future Total Traffic (Optimized)			
	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)	Vol	V/C	LOS (Delay)	Queues (50/95)
AM Peak Hour												
Overall	-	0.43	B (17)	-/-	-	0.55	C (23)	-/-	-	0.67	C (26)	-/-
EBL	65	0.72	E (71)	16/36	100	0.96	**F (121)**	26/53	191	0.97	**F (96)**	47/93
WBTR	212	0.73	E (57)	46/72	280	0.75	D (52)	64/87	281	0.54	D (36)	54/82
PM Peak Hour												
Overall	-	0.60	B (17)	-/-	-	0.72	C (26)	-/-	-	0.88	C (30)	-/-
EBL	57	0.58	E (58)	15/29	130	0.88	**F (87)**	34/59	200	0.94	**F (88)**	52/100
EBTR	165	0.67	E (58)	39/62	196	0.56	D (47)	45/65	201	0.45	D (39)	42/66
WBL	46	0.48	D (53)	12/24	118	0.83	E (77)	31/51	118	0.57	D (43)	27/49

Table 6-6: Markham Road and Brimorton Drive Queues

AM	Existing Traffic			Future Background Traffic (Optimized)			Future Total Traffic (Optimized)		
Mvmt	Storage	50th Queue	95th Queue	Storage	50th Queue	95th Queue	Storage	50th Queue	95th Queue
AM Peak Hour									
EBL	40	16	36	40	26	53	40	47	93
WBL	36	11	23	36	26	42	36	22	39
NBL	40	2	6	40	2	8	40	4	11
SBL	36	5	13	36	6	18	36	9	21
PM Peak Hour									
EBL	40	15	29	40	34	59	40	52	100
WBL	36	12	24	36	31	51	36	27	49
NBL	40	5	12	40	6	16	40	8	25
SBL	36	11	20	36	17	48	36	20	52

Existing Conditions: Under existing conditions, the intersection operates at capacity with overall v/c ratios below 1.00 with LOS B during both weekday AM and PM peak hours. The eastbound left, eastbound through/right, and westbound through/right movements were found to operate with LOS E but are deemed acceptable as v/c ratios for the movements are below 1.00 during both AM and PM peak hours. No additional critical movements were identified.

Future Background Conditions: Under future background conditions with signal optimization applied, the intersection is projected to operate within capacity with the overall v/c ratio remaining below 1.00 with LOS C. The eastbound left movement is projected to operate with LOS F during both weekday AM and PM peak hours but is considered acceptable due to v/c ratios for the movement remaining below 1.00. Likewise, the westbound left movement operates with LOS E during the PM peak hour but maintains a v/c ratio below 1.00. No other critical movements were identified.

Future Total Conditions: Under future total conditions, the intersection is expected to continue operating with capacity. The eastbound left movement is expected to see increased volumes with the addition of site traffic volumes but continues to maintain an acceptable v/c ratio of below 1.00. No other critical movements were identified.

Queue Analysis: Based on analysis results, 50th percentile queue lengths for the eastbound left movement is projected to exceed the existing storage length. The overages in vehicle queues for the movement is expected to affect the eastbound through/right movement at the intersection and disrupt movements in surrounding driveways, including the eastbound left and southbound left movements at the Brimorton Dr & South Site Access intersection. However, it should be noted that during both AM and PM peak hours, 95th percentile vehicle queues for the southbound left/right movement at the Brimorton Dr & South Site Access intersection is expected to be a maximum of 2 vehicles. Furthermore, given how the overages are a result of site traffic volumes being added to the movement, it is believed that vehicles from the subject site intending on making the eastbound left movement at the intersection will not be making the southbound left turn at the Brimorton Dr & South Site Access intersection until adequate storage lane space is provided for the eastbound left movement, meaning queue buildups for the movement will likely be lower than projected. Furthermore, under the unlikely scenario where the queues make it impossible for vehicles from the subject site to make the southbound left movement at the Brimorton Dr & South Site Access intersection, it is assumed that vehicles will instead make the southbound right turn and utilize alternate routes available to exit the subject site and access their respective destinations.

No other constraints were identified.

6.3 UNSIGNALIZED INTERSECTIONS

The results for the unsignalized intersections under each traffic scenario during the weekday AM and PM peak hours are summarized in the sections below.

6.3.1 Markham Road and Meadowglen Place

The intersection capacity analysis results at Markham Road and Meadowglen Place during the AM and PM peak hours are summarized in **Table 6-7.** Of note, only movements of interest are shown.

Table 6-7: Intersection Capacity Analysis - Markham Road & Meadowglen Place

Mvmt	Existing				Mvmt	Future Background				Mvmt	Future Total			
	Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)
AM Peak Hour														
Overall	-	-	- (1)	-/-	Overall	-	-	- (2)	-/-	Overall	-	-	- (2)	-/-
WBR	77	0.15	B (13)	-/1	WBR	207	0.46	C (19)	-/2	WBR	207	0.50	C (21)	-/3
PM Peak Hour														
Overall	-	-	- (0)	-/-	Overall	-	-	- (1)	-/-	Overall	-	-	- (1)	-/-
WBR	44	0.10	B (14)	-/0	WBR	164	0.46	C (23)	-/2	WBR	164	0.49	C (24)	-/3

Existing Conditions: All movements at the unsignalized intersection operate within capacity and with an acceptable LOS "B" during the AM and PM peak hours.

Future Background Conditions: Similar to existing conditions, all movements at the unsignalized intersection are expected to operate within capacity and with an acceptable LOS "C" during the AM and PM peak hours.

Future Total Conditions: With the addition of the site traffic, there are no concerns with regards to v/c ratios, delays, or queuing.

6.3.2 Markham Road and Central Site Access

The intersection capacity analysis results at Markham Road and the Central Site Access during the AM and PM peak hours are summarized in **Table 6-8.** Of note, only movements of interest are shown.

Table 6-8: Intersection Capacity Analysis - Markham Road & Central Site Access

Mvmt	Existing				Mvmt	Future Background				Mvmt	Future Total			
	Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)
AM Peak Hour														
Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-
EBL	1	0.01	D (33)	-/0	EBL	1	0.01	D (35)	-/0	EBL	1	0.01	E (38)	-/0
EBR	8	0.02	B (13)	-/0	EBR	8	0.02	B (14)	-/0	EBR	8	0.02	B (14)	-/0
PM Peak Hour														
Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-
EBL	3	0.03	D (34)	-/0	EBL	3	0.03	D (34)	-/0	EBL	3	0.03	E (38)	-/0
EBR	17	0.06	C (17)	-/0	EBR	17	0.06	C (17)	-/0	EBR	17	0.06	C (18)	-/0

Existing Conditions: All movements at the unsignalized intersection operate within capacity and with an acceptable LOS "D" or better during the AM and PM peak hours.

Future Background Conditions: Similar to existing conditions, all movements at the unsignalized intersection are expected to operate within capacity and with an acceptable LOS "D" or better during the AM and PM peak hours.

Future Total Conditions: The eastbound left movement operates with LOS "E" under future total conditions during both weekday AM and PM peak hours. However, this is expected due to the nature of making an unprotected left turn into an arterial road like Markham Road. Furthermore, v/c ratios for the movement are below 0.03 for both peak hours, making this acceptable.

6.3.3 Markham Road and North Site Access

The intersection capacity analysis results at Markham Road and the North Site Access during the AM and PM peak hours are summarized in **Table 6-9.** Of note, only movements of interest are shown.

Table 6-9: Intersection Capacity Analysis – Markham Road & North Site Access

Mvmt	Existing				Mvmt	Future Background				Mvmt	Future Total			
	Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)
AM Peak Hour														
Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-
NBL	7	0.02	C (15)	-/0	NBL	7	0.02	C (16)	-/0	NBL	7	0.02	C (17)	-/0
PM Peak Hour														
Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-
NBL	2	0.01	B (14)	-/0	NBL	2	0.01	B (14)	-/0	NBL	2	0.01	B (15)	-/0

Existing Conditions: All movements at the unsignalized intersection operate within capacity and with an acceptable LOS "B" or better during the AM and PM peak hours.

Future Background Conditions: Similar to existing conditions, all movements at the unsignalized intersection are expected to operate within capacity and with an acceptable LOS "B" or better during the AM and PM peak hours.

Future Total Conditions: With the addition of the site traffic, there are no concerns with regards to v/c ratios, delays, or queuing.

6.3.4 Brimorton Drive and South Site Access

The intersection capacity analysis results at Brimorton Drive and the South Site Access during the AM and PM peak hours are summarized in **Table 6-10.** Of note, only movements of interest are shown.

Table 6-10: Intersection Capacity Analysis – Brimorton Drive & South Site Access

Mvmt	Existing				Mvmt	Future Background				Mvmt	Future Total			
	Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)
AM Peak Hour														
Overall	-	-	- (2)	-/-	Overall	-	-	- (1)	-/-	Overall	-	-	- (4)	-/-
EBL	16	0.01	A (8)	-/0	EBL	16	0.02	A (8)	-/0	EBL	20	0.02	A (8)	-/0
EBT	167	0.00	A (0)	-/0	EBT	215	0.00	A (0)	-/0	EBT	215	0.00	A (0)	-/0
SBLR	50	0.09	B (11)	-/0	SBLR	50	0.10	B (12)	-/0	SBLR	158	0.40	C (18)	-/2
PM Peak Hour														
Overall	-	-	- (1)	-/-	Overall	-	-	- (1)	-/-	Overall	-	-	- (3)	-/-
EBL	20	0.02	A (8)	-/0	EBL	20	0.02	A (8)	-/0	EBL	26	0.02	A (8)	-/0

Mvmt	Existing				Mvmt	Future Background				Mvmt	Future Total			
	Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)
EBT	200	0.00	A (0)	-/0	EBT	304	0.00	A (0)	-/0	EBT	304	0.00	A (0)	-/0
SBLR	38	0.07	B (11)	-/0	SBLR	38	0.08	B (12)	-/0	SBLR	121	0.31	C (17)	-/1

Existing Conditions: All movements at the site access operate within capacity and with an acceptable LOS "B" or better during the AM and PM peak hours.

Future Background Conditions: Similar to existing conditions, all movements at the unsignalized intersection are expected to operate within capacity and with an acceptable LOS "B" or better during the AM and PM peak hours.

Future Total Conditions: With the addition of the site traffic, there are no concerns with regards to v/c ratios, delays, or queuing. The site access for the proposed development is expected to operate well.

6.3.5 North-South Public Road and Ellesmere Road

As requested by the City, the new established North-South Public Road and Ellesmere Road intersection was analyzed under future conditions. The intersection capacity analysis results during the AM and PM peak hours are summarized in **Table 6-11.** Of note, only movements of interest are shown.

Table 6-11: Intersection Capacity Analysis – North-South Public Road & Ellesmere Road

Mvmt	Future Background				Mvmt	Future Total			
	Vol	V/C	LOS (Delay)	Queues (50/95)		Vol	V/C	LOS (Delay)	Queues (50/95)
AM Peak Hour									
Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-
NBR	35	0.06	B (11)	-/0	NBR	35	0.06	B (11)	-/0
PM Peak Hour									
Overall	-	-	- (0)	-/-	Overall	-	-	- (0)	-/-
NBR	13	0.03	B (13)	-/0	NBR	13	0.03	B (13)	-/0

Future Background Conditions: All movements at the unsignalized intersection are expected to operate within capacity and with an acceptable LOS "B" during the AM and PM peak hours.

Future Total Conditions: With the addition of the site traffic, there are no concerns with regards to v/c ratios, delays, or queuing.

6.4 ANALYSIS SUMMARY

The analysis results indicate that the proposed development is expected to have an acceptable impact on road network operations in the surrounding area with the proposed signal timing plans. While there is some congestion in the network, the existing South Access is expected to operate well with the addition of site traffic.

7 SIGNAL WARRANT REVIEW

As requested by City Staff, a peak hour signal warrant calculation was conducted at the intersection of Markham Road and Meadowglen Place to determine if a signalized intersection is warranted or not under the future total traffic conditions for 2029. The analysis was based on the Ministry of Transportation (MTO Book 12) requirements for installation of traffic signals for new intersections. The analysis examines the combined weekday AM and PM peak hours. **Table 7-1** summarizes the warrant review results, with detailed results provided in **Exhibit J**.

Table 7-1: Signal Warrant Review

Warrant	Percent Compliant	Warrant Satisfied?
Warrant 1 – Minimum Vehicular Volume		
1A	100%	No
1B	30%	No
Warrant 2 – Delay to Cross Traffic		
2A	100%	No
2B	0%	No

Results indicate that a traffic signal is not warranted under future total traffic conditions for 2029.

8 MULTI-MODAL ANALYSIS

The City of Ottawa's *Multi-Modal Level of Service (MMLOS) Guidelines* were adopted to generate levels of service (LOS) to describe the convenience and comfort level of existing and proposed transit and active transportation infrastructure within the subject area. The results are presented on a scale of A to F, where A represents preferred conditions and F represents the least preferred conditions, depending on the criteria of each mode. It should be noted that LOS is not always the desired target for all modes, as each mode is considered independently, and the minimum LOS targets depend on the context of the street and surrounding area.

The transit level of service (TLOS) was conducted for the signalized study intersections along Markham Road & Ellesmere Road and Markham Road & Brimorton Drive, as these intersections were the only intersections within the study area with public transit service.

The pedestrian level of service (PLOS) and cycling level of service (BLOS) evaluation was conducted for the "worst section" of the following road segments:

- Markham Road between Ellesmere Road and Brimorton Drive
- Brimorton Drive between Dolly Varden Boulevard to Markham Road

A breakdown of the calculations and lookup tables from the MMLOS Guidelines are provided in **Appendix K**.

8.1 TRANSIT ASSESSMENT

Table 8-1 summarizes the results for the transit level of service evaluation.

Table 8-1: Transit Level of Service Evaluation

Intersection	Criteria	TLOS
Markham Road and Ellesmere Road	Delay	F
Markham Road and Brimorton Drive		C

The intersection of Markham Road & Ellesmere Road indicates a TLOS score of F as transit vehicles mix with general traffic without dedicated bus lanes, thus leading to transit delays at the signalized intersection. Due to Brimorton Drive being a collector road, less turning movements are observed at the Markham Road & Brimorton Drive intersection. As such, less delays are experienced by buses stopping at curbside lanes, which is reflected by the TLOS score of C.

Although outside of the study horizon, it should be noted that the eastbound and westbound movements at the Markham Road & Ellesmere Road intersection are anticipated to see improved TLOS performance with the introduction of grade-separated bus lanes as part of the Durham-Scarborough BRT initiative.

8.2 PEDESTRIAN AND CYCLIST ASSESSMENT

Table 8-2 summarizes the results of the pedestrian and cyclist level of service evaluations.

Table 8-2: Pedestrian and Cyclist Level of Service Evaluation

Segment Evaluation	Criteria	Markham Road – Ellesmere Road to Brimorton Drive	Brimorton Drive – Dolly Varden Boulevard to Markham Road
PLOS	• sidewalk width • boulevard width • motor vehicle volume (AADT/lane) • presence of on-street parking • vehicle operating speed	D	C
BLOS	• type of cycling facility • street width • vehicle operating speed • width of bike lane (if present) • bike lane blockage (if present)	E	C

Pedestrian conditions on the analyzed segment are indicated to be PLOS C on the west side of Markham Road and PLOS D on the east side of the segment. There are sidewalks provided along the corridor with adequate boulevard separation, but conditions are somewhat impacted by the absence of on-street parking and high motor vehicle volumes. Both sides of Brimorton Drive received a PLOS grade of C due to the narrow sidewalk width provided for the segment.

The Markham Road segment indicates a BLOS of E due to the lack of cycling facilities available and the street width, making it less comfortable for inexperienced cyclists to use. For the Brimorton Drive segment, the north side of the street receives a BLOS C while the south side receives a BLOS B. While both sides of the segment have a dedicated bicycle lane with approximately 1.6 m in width, the “worst section” of the north side of the segment features a curbside parking lane adjacent to the bicycle lane, which creates increased risk for cyclists due to parking vehicles needing to traverse across the bicycle lane to access the parking spaces.

9 PARKING ASSESSMENT

This section reviews the vehicular and bicycle parking standards based on the zoning by-law requirements applicable to the subject site.

9.1 ZONING BY-LAW REQUIREMENTS – BICYCLE PARKING

The bicycle parking provision of the proposed development has been assessed according to the standards set out by the City of Toronto Zoning By-law 569-2013 and the Toronto Green Standard Tier 1 Guidelines. The subject site is located in Bicycle Zone 2, and the required bicycle parking rates and provisions are summarized in **Table 9-1**.

Table 9-1: Zoning By-law Bicycle Parking Requirements

Building	Land Use	Units/GFA	ZBL 569-2013 Bike Zone 2	Min. Requirement	Proposed Supply
A	Residential	438	Long Term: 0.68 spaces/unit	298	299
			Short Term: 0.07 spaces/unit	31	32
			Building A Total	**329**	**331**
B	Residential	197	Long Term: 0.68 spaces/unit	134	147
			Short Term: 0.07 spaces/unit	14	18
			Building B Total	**148**	**165**
			Development Total	**477**	**496**

According to the City of Toronto Zoning By-law 569-2013 and TGS, Building A requires a total of 329 bicycle parking spaces, consisting of 31 short-term and 298 long-term residential spaces. Building B requires a total of 148 bicycle parking spaces, consisting of 14 short-term and 134 long-term residential spaces. The proposed bicycle parking supply exceeds the applicable zoning requirements.

9.2 ZONING BY-LAW REQUIREMENTS – VEHICLE PARKING

The parking requirements for the subject site are governed by the parking standards set out in Zoning By-law 569-2013 as amended by By-law 89-2022. In addition to the removal of most parking minimums, the Zoning By-law Amendment updated the separation of parking requirements from the previous Policy Area approach, which included five areas, into three distinct areas: Parking Zone (PZ) A and B and “all other areas”.

The subject site is located in Parking Zone B (PZB) and as such the requirements based on the By-law 89-2022 parking rates for PZB are summarized below in **Table 9-2.**

Table 9-2: Zoning By-law 89-2022 Vehicular Parking Standards - Parking Zone B

Building	Unit Type	Units	ZBL 89-2022 Parking Zone B				Proposed Supply
			Min. Rate	Max. Rate	Min. Required Spaces	Max. Permitted Spaces	
A	1-Bedroom	304	-	0.8 spaces/unit	-	243	82
	2-Bedroom	89	-	0.9 spaces/unit	-	80	
	3-Bedroom	45	-	1.1 spaces/unit	-	49	
				Resident Sub-Total	**0**	**372**	**82**
	Visitor	438	2 + 0.05/unit	1/unit for the first 5 units & 0.1/unit for the 6th and subsequent unit	23	48	23
				Non-Residential Sub-Total	**23**	**48**	**23**
				Building A Total	**23**	**420**	**105**
B	1-Bedroom	146	-	0.8 spaces/unit	-	116	92
	2-Bedroom	32	-	0.9 spaces/unit	-	28	
	3-Bedroom	19	-	1.1 spaces/unit	-	20	
				Resident Sub-Total	**0**	**164**	**92**
	Visitor	197	2 + 0.05/unit	1/unit for the first 5 units & 0.1/unit for the 6th and subsequent unit	11	24	11
				Non-Residential Sub-Total	**11**	**24**	**11**
				Building B Total	**11**	**188**	**103**

According to Zoning By-law 89-2022, the proposed Building A is subject to a minimum parking requirement of 23 visitor spaces and an overall maximum of 420 residential and visitor spaces. As such, the parking supply proposed for Building A, consisting of 82 residential and 23 visitor parking spaces will satisfy the requirements of the Zoning By-law.

Proposed Building B is subject to a minimum parking requirement of 11 visitor spaces and an overall maximum of 188 residential and visitor spaces. As such, the parking supply for Building B, consisting of 92 residential spaces and 11 visitor spaces, also satisfies the requirements.

9.3 ACCESSIBLE VEHICLE PARKING REQUIREMENTS

The City of Toronto Zoning By-law 569-2013, through By-law 89-2022, provides updated parking requirements to determine effective parking requirements to calculate the required accessible parking supply for the subject site. The by-law requirements and proposed supply are illustrated below in **Table 9-3**.

Table 9-3: Accessible Parking Requirements

Building	Unit Type	Units	Rate (PZB)	Effective Parking Spaces	Required Accessible Spaces	Provided Accessible Spaces
A	1-Bedroom	304	0.8 spaces/unit	304	12	12
	2-Bedroom	89	0.9 spaces/unit	89		
	3-Bedroom	45	1.1 spaces/unit	45		
	Building A Residential Sub-Total			**372**		
	Visitor	438	0.1 spaces/unit	43		
	Building A Residential and Visitor Total			**415**	**12**	
	Building A Min. Number of Accessible Spaces				**12**	**12**
B	1-Bedroom	146	0.8 spaces/unit	116	7	7
	2-Bedroom	32	0.9 spaces/unit	28		
	3-Bedroom	19	1.1 spaces/unit	20		
	Residential Sub-Total			**164**		
	Visitor	197	0.1 spaces/unit	19		
	Building B Residential and Visitor Total			**198**	**7**	
	Building B Min. Number of Accessible Spaces				**7**	**7**

Building A is required to provide a minimum of 12 accessible parking spaces as outlined in the zoning by-law requirements. Building B is required to provide a minimum of 7 accessible parking spaces as outlined in the zoning by-law requirements.

Building A and B will satisfy the requirements by providing 12 and 7 accessible spaces, respectively.

10 LOADING ASSESSMENT

The City of Toronto Zoning By-law 569-2013 was reviewed to determine the loading requirements for the proposed development. **Table 10-1** summarizes the loading requirements according to the City's by-law and the proposed supply.

Table 10-1: Zoning By-law Loading Requirements

Building	Land Use	Unit Count	ZBL 569-2013		Proposed Supply
			Required Rate	Loading Space Required	
A	Residential	438	400 Dwelling Units or More	1 Type "G" and 1 Type "C"	1 Type "G"
B	Residential	197	31 to 399 Dwelling Units	1 Type "G"	1 Type "G"
			Total	2 Type "G" and 1 Type "C"	2 Type "G"

The subject site is providing one (1) Type "G" space for each building. For Building A, the Type "G" loading space will act as a shared loading space to accommodate the small deliveries that require a Type "C" space. To avoid conflicts, the use of the loading area for deliveries and moving activities can be scheduled to occur outside of waste collection activities. The proposed loading arrangement is expected to be sufficient to meet the needs of the proposed development.

A review of the functionality and accessibility of the proposed loading spaces indicates that the proposed Type G loading spaces can be safely accessed and egressed by a garbage truck. Swept paths were conducted which confirmed that garbage trucks will be able to enter the loading zone and reverse back out of the space to egress the site. Swept path diagrams are provided in **Appendix L**.

11 TORONTO GREEN STANDARDS REVIEW

The subject site is required to meet the Tier 1 Performance Measures listed under the Toronto Green Standards Version 4 (TGS v4) for Mid- to High-Rise Residential and Non-Residential developments. This section will review the TGS v4 development features based on the applicable requirements for the study area. Overall, the proposed development is compliant with all the Tier 1 Performance Measures where applicable with respect to transportation-related measures.

11.1 LOW EMISSIONS TRANSPORTATION

11.1.1 Single-Occupant Vehicle Trips

Section AQ 1.1 of TGS v4 requires that the proposed development reduce single-occupancy-vehicle trips by 25%. This will be achieved through the inclusion of a variety of multimodal infrastructure strategies and Transportation Demand Management (TDM) measures. The subject site meets this requirement as the proposed development includes a TDM plan. This plan will be discussed in greater detail in **Section 12**.

11.1.2 Electric Vehicle Infrastructure

Section AQ 1.2 of the TGS v4 requires that parking spaces in the proposed development be equipped with an Energized Outlet in accordance with Zoning By-law 569-2013. According to the Zoning By-law, all residential parking spaces provided for dwelling units and 25% of non-residential parking spaces must include an energized outlet to ensure electric vehicles can be accommodated. **Table 11-1** summarizes the required Electric Vehicle (EV) parking supply.

Table 11-1: Zoning By-Law 569-2013 Electric Vehicle Parking Standards

Building	Use	Proposed Spaces	Minimum Rate	Required EV Spaces	Proposed EV Spaces
A	Residential	82	100% of parking spaces	82	82
	Visitor	23	25% of parking spaces	6	6
	Total	**105**	-	**88**	**88**
B	Residential	92	100% of parking spaces	92	**92**
	Visitor	11	25% of parking spaces	3	**3**
	Total	**103**	-	**95**	**95**

The development will provide 174 residential spaces and 9 visitor spaces with EVSE capabilities, meeting all requirements.

11.2 CYCLING INFRASTRUCTURE

11.2.1 Bicycle Parking Rates

Section AQ 2.1 of TGS v4 requires developments to provide bicycle parking spaces in accordance with Zoning By-law 569-2013. These rates will inform the bicycle parking supply to be provided on-site to accommodate travel by bicycle to and from the subject site. As discussed in **Section 9.1**, the proposed development will provide bicycle parking facilities that meet the requirements for long-term and short-term bicycle parking for residential use. This will support and encourage active transportation and travel by bicycle in place of a personal vehicle for residents and visitors.

11.2.2 Long-Term Bicycle Parking Location

Section AQ 2.2 of TGS v4 requires developments to provide long-term bicycle parking in a secure and controlled access bicycle parking facility or purpose-built bicycle locker on the first or second storey of the building or on levels below ground commencing with the first level below ground. Long-term bicycle parking can be provided on levels below ground when at least 50% of the area of the level is occupied by bicycle parking spaces until all required spaces have been provided.

The subject development proposes to place long-term residential bicycle parking spaces within the P1 and P2 level in a secure bicycle storage room.

11.2.3 Short-Term Bicycle Parking Location

Section AQ 2.3 of TGS v4 requires developments to provide short-term bicycle parking in a highly visible and publicly accessible location at grade or on the first parking level of the building below grade.

The site plan for the subject site proposes to provide short-term residential bicycle parking in a secure weather protected bicycle room within the P1 level of the building. This provides easy access for visitors to first park their bikes. The subject site therefore meets this requirement through appropriate provisions on the site plan.

11.2.4 Electric Bicycle Infrastructure

Section AQ 2.4 of TGS v4 requires developments to provide bicycle parking spaces equipped with an energized outlet for at least 15 percent of the required long-term bicycle parking.

As such, 15% of long-term residential spaces are equipped with an energized outlet.

11.2.5 Shower and Change Facilities

Section AQ 2.5 of TGS v4 requires developments to provide shower and change facilities consistent with the rate identified in Zoning By-law 569-2013. As the proposed development is a residential development, on-site shower and change facilities are not required.

11.3 PEDESTRIAN INFRASTRUCTURE

11.3.1 Connectivity

Section AQ 3.1 of TGS v4 requires developments to provide safe, direct, universally accessible pedestrian routes that connect the buildings on-site to the off-site pedestrian network and priority destinations. The subject site meets this requirement as the plan for the development includes several elements to maintain and improve pedestrian access and permeability through the site. Building entrances connect to the adjacent sidewalks along Brimorton Drive and allow ease of access to the surrounding pedestrian network.

11.3.2 Sidewalk Space

Section AQ 3.2 requires developments to provide a context-sensitive pedestrian clearway that is a minimum of 2.1 m wide, to accommodate pedestrian flow safely and comfortably. Currently, a sidewalk of approximately 1.8 m exists along Brimorton Drive. Based on the latest site plan, a sidewalk of at least 2.1 m is being provided throughout the site and along Brimorton Drive.

11.3.3 Weather Protection

Section AQ 3.3 of the TGS v4 requires developments to provide covered outdoor waiting areas for pedestrian comfort and protection from inclement weather. Covered outdoor waiting areas are proposed via canopies at the building entrances.

11.3.4 Pedestrian Specific Lighting

Section AQ 3.4 of the TGS v4 requires developments to provide pedestrian-scale lighting that is evenly spaced, continuous and directly onto sidewalk pathways, entrances, outdoor waiting areas and public spaces. The subject site will meet this requirement by providing appropriate pedestrian scale lighting throughout the site plan. These measures will foster a safer experience for pedestrians regardless of the time of day and promote walking, biking, and riding public transit as a viable option to travel to and from the subject site.

12 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 that support alternative modes of transportation. The recommendations should enhance non-single occupant auto vehicle trips for future residents of the subject development.

These TDM strategies are critical in achieving a balanced multi-modal transportation system in the City of Toronto and supporting goals towards sustainable development as identified by the Toronto Green Standards (TGS) and TransformTO Net Zero Strategy to achieve net zero greenhouse gas emissions by 2040.

A specific requirement of the TGS is to reduce single-occupancy vehicle (SOV) trips generated by the proposed development by 25%. The following multi-modal infrastructure strategies and TDM measures are recommended for consideration to support the subject site's parking strategy and role in transforming the surrounding neighbourhood. As the development moves through the development process, the TDM plan will undergo further refinement.

12.1 CYCLING-BASED STRATEGIES

On-site bicycle parking facilities

The proposed development will provide bicycle parking facilities to support and encourage active transportation. A total supply of 496 bicycle parking spaces consisting of 446 long-term, 50 short-term spaces will be accommodated on site. This supply is provided to satisfy the required rate of 0.68 spaces per unit for residents and 0.07 spaces per unit for residential visitors.

The proposed development will provide bicycle parking facilities within the P1 and P2 parking levels, in secure locations. This provision will accommodate bicycle parking in a manner that is safe, secure, and convenient.

Provision of Bicycle Repair Station

Two (2) bicycle repair stations are provided on-site, one in each building. The provision of the bicycle repair station will support the use of cycling as an alternative mode of transportation to further reduce SOV trips from the site and reduce barriers to cycling.

Promote and increase cycling awareness and multi-modal transport

It is recommended that information packages be provided to residents of the proposed development to help encourage active transportation and increase awareness of different travel alternatives. The package should include information regarding the environmental and health benefits of cycling, rules of the road, as well as maps of active transportation available in the surrounding area.

Estimated Impact: Based on the trip generation for the subject site, currently no trips undertaken to and from the subject site are cycling trips in either the AM or PM peak hour (**Table 4-4**). However, with the implementation of the DSBRT project, there is potential for cycling lanes to be provided along Ellesmere Road. The combination of these measures, notably on-site bicycle parking facilities, bicycle repair stations and promotional/information packages, have the ability to further encourage the use of cycling with an estimated impact of at least 5%.

12.2 PEDESTRIAN-BASED STRATEGIES

Building entrances are to be oriented close to the street with direct connections to pedestrian pathways.

The proposed pedestrian entrance for the subject site is oriented towards Brimorton Drive, which provides convenient links for pedestrians, transit users and cyclists to access the residential units. The development should also maintain enhanced landscaping and facades throughout the site to encourage walking and ensure minimal barriers to provide a safe and accessible pedestrian realm.

The proposed pedestrian facilities as part of the development plans will further improve connections for residents and visitors to nearby commercial uses and transit stops. To further enhance the pedestrian realm and consider persons with mobility difficulties, the passageways should be well lit with enhanced landscaping and minimal barriers to provide a permeable pedestrian corridor. This will create a pleasant and safe pedestrian experience.

Walking distance to nearby amenities

The subject development is within convenient walking distance to a variety of destinations including grocery stores, pharmacies, retails stores, banks and restaurants, which all facilitate walking trips. Commercial space located within proximity to the subject site provides an opportunity for existing and future residents to walk to destinations without the need for a private automobile.

Estimated Impact: Based on the trip generation conducted for the subject site and as determined through the utilization of TTS modal split data (**Table 4-4**), about 8% of trips undertaken to and from the site are walking trips in the AM and PM peak hours, indicating a prevalence of walking trips. The combination of these robust pedestrian measures, inclusive of the location of building entrances close to the street providing connections to pedestrian pathways and walking distance to nearby amenities, will reduce SOV trips and have the ability to further encourage walking with an estimated impact of at least 10%.

12.3 TRANSIT-BASED STRATEGIES

Communication strategy and information packages

For residents to take advantage of the transit services surrounding the subject site, it is recommended that the owners provide information packages and communications to increase transit awareness and multimodal transport by encouraging active transportation and different travel demand management programs. The information packages should contain public transit information such as route maps and scheduled timetables.

Estimated Impact: Based on the trip generation conducted for the subject site and as determined through the utilization of TTS modal split data (**Table 4-4**), about 40% of trips undertaken to and from the site are transit trips in the AM and PM peak hours, indicating a prevalence of transit usage. It is estimated that providing information packages will have the ability to further encourage the use of transit with an estimated impact of at least 15%.

12.4 IMPACT OF TDM MEASURES

The proposed TDM measures are expected to further support the site's proposed parking strategy by increasing the convenience and attractiveness of taking transit, walking, or cycling to/from the subject site. The proposed TDM measures will help further reduce vehicle activity associated with the subject site and encourage a lifestyle that largely relies upon transit and active transportation. **Table 12-1** summarizes the proposed strategies and the expected auto trip reductions.

Table 12-1: Summary of TDM Strategies and Estimated Impacts

Recommended TDM Measures	Benefits	Impact[(1)]
Cycling-Based Strategies		
On-site bicycle parking facilities	+ Supports and encourages cycling as a primary mode of travel +Provides secure bicycle parking and bicycle repair station on-site	~5%
Provision of bicycle repair stations	+Supports cycling as an alternative to SOV trips +Reduces barriers to cycling	
Promote and increase cycling awareness and multi-modal transport	+Encourages active transportation and increase awareness of active travel alternatives +Spreads awareness of benefits of cycling	
Pedestrian-Based Strategies		
Building entrances are to be oriented close to the street with direct connections to the pedestrian pathways	+ Encourages walking and improves pedestrian realm +Provides convenient linkages for pedestrians etc.	~10%
Walking distance to nearby amenities	+Reduce SOV trips for residents shopping	
Transit-Based Strategies		
Communication strategy and information packages	+Spreads awareness to residents about available transit services in area and encourage usage	~15%
	Total Estimated Reductions	~30%

Note: (1) – The estimated impact is based on the existing modal split (see Appendix D). Given the pedestrian, cycling, and transit network, these modal splits are expected to be achieved at the minimum.

The combination of these TDM strategies listed above is expected to significantly reduce the auto-dependency of residents and visitors in the subject development and encourage more sustainable travel habits. This thereby enables the requirements of TGS v4 to be met and contributes to a 25% SOV reduction for the subject development.

13 CONCLUSIONS AND RECOMMENDATIONS

- The development proposal consists of two (2) residential infill buildings consisting of 15- and 37-storeys, respectively. A total of 635 residential units are proposed. Access to the development is proposed via the existing unsignalized all-movement access along Brimorton Drive.
- The subject site is in an area well-serviced by the Toronto Transit Commission (TTC) transit networks. The subject site is within walkable distance to bus stops along Markham Road. Further, the subject site is located in a neighbourhood with some nearby cycling infrastructure and a good pedestrian network and environment.
- The majority of neighbourhood trips are currently taken using transit or walking/cycling. Auto driver trips only account for 40% of resident travel behaviour during the weekday peak periods. Trip generation for the proposed development was estimated using the observed trip generation rates at the existing building located at 1050 Markham Road. Based on observed trip generation rates, the proposed development is anticipated to generate 184 two-way vehicle trips during the AM peak period (76 inbound and 108 outbound), and 191 two-way trips during the PM peak hour (108 inbound and 83 outbound).
- The intersection capacity analysis findings indicate that the proposed development will have an acceptable impact on the surrounding road network. The site access is anticipated to operate well. Minimal changes in operations with the addition of the site traffic in future total conditions was observed and no constraints were identified.
- Building A will provide 299 long-term bicycle parking spaces and 32 short-term spaces and Building B will provide 147 long-term and 18 short-term spaces. Each building is satisfying the by-law requirements.
- The development will provide one (1) Type “G” loading space for each building for a total of two (2) Type “G” loading spaces. It is anticipated that the use of the loading area for deliveries and moving activities can be scheduled to occur outside of waste collection activities to avoid conflicts.
- The proposed development will meet all of the Tier 1 Performance Measures in the TGS v4.0 where applicable. A set of Transportation Demand Management (TDM) measures have been recommended to reduce single-occupant vehicle trips by at least 25%, satisfying the TGS v4.0 requirements.

APPENDIX A

Terms of Reference

LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON, L3R 9R9 Canada
T | 905 470 0015 F | 905 470 0030
WWW.LEA.CA

January 5, 2024

Reference Number: 24159/210

Transportation Services
City of Toronto

To Whom It May Concern,

RE: Terms of Reference
Transportation Impact Study for Proposed Residential Development
1050 Markham Road, City of Toronto

LEA Consulting Ltd. would like to confirm the following work plan for a Transportation Impact Study (TIS) for the proposed residential redevelopment at 1050 Markham Road in the City of Toronto. The subject site is currently occupied by a residential building and multi-level parking facilities. Based on the concept plan, an infill development which consists of adding two new residential buildings at the southern portion of the subject site was proposed. **Figure 1** below illustrates the subject site location.

Figure 1: Subject Site

The TIS will be conducted following the ***City of Toronto Guidelines for the Preparation of Transportation Impact Studies***. The following outlines the proposed Terms of Reference for the TIS.

Study Area & Traffic Data

LEA will review the existing conditions of the surrounding area, including the existing road network (lane configuration and turning restrictions), pedestrian and cycling network, and transit network. The proposed study area includes the following intersections:

- Markham Road and Ellesmere Road (Signalized);
- Markham Road and Meadowglen Place (Unsignalized);
- Markham Road and Brimorton Drive (Signalized);
- Markham Road and Existing North Site Access (Unsignalized);
- Markham Road and Existing Central Site Access (Unsignalized); and
- Brimorton Drive and Existing South Site Access (Unsignalized).

LEA proposes to survey the intersections during the weekday AM and PM peak periods.

Traffic Assessment and Study Horizon Year

The TIS will assess traffic operations during weekday AM and PM peak hour for the study area intersections, and conducting traffic capacity analysis using Highway Capacity Manual (HCM 6th edition) methods with the aid of Synchro 11 Software. A five (5) year horizon period to the year 2029 will be assessed as part of the study.

Background Traffic

General Corridor Growth Rate – Please provide the general corridor growth rate that would be applicable to this study in particular along Markham Road and Ellesmere Road.

Road Network Improvements – LEA has not identified any road network improvements planned for the study area within the 2029 horizon. It is requested that City staff provide information should there be any planned infrastructure changes.

Background Development Traffic – Upon initial review of the City of Toronto Development Applications database, two background developments in the study area was identified as summarized in **Table 1**.

Table 1: Identified Background Developments in the Study Area

#	Address of Development	Description	Application Status
1	1021-1035 Markham Road	34-storey mixed-use building (331 residential units and 2,125.1m^2 of retail GFA)	NOAC Issued
2	1125-1137 Markham Road / 2141 Ellesmere Road	Four mixed-use buildings (997 residential units and 960m^2 of commercial GFA)	Under Review
3	1151 Markham Road	44-storey mixed-use building (440 residential units and 223m^2 of retail GFA)	Under Review
4	1-2 Meadowglen Place	820 residential units and 1,080m^2 of retail GFA	Under Review (Some of the developments have been constructed)

It is requested that City staff identify and provide traffic studies for any additional developments which should be included in the TIS analysis.

Trip Generation, Distribution and Assignment

The trip generation of the proposed development will be based on site trips calculated from the 11th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual or historical proxy trip rates applied at similar developments in the vicinity of the study area during the weekday AM and PM peak periods.

The general trip distribution utilized will be based on a review of the latest 2016 Transportation Tomorrow Survey (TTS) data in the vicinity of the subject site. Trip assignment will be revised accordingly to reflect the configuration of the site access, turning restrictions and logical routings.

Future Traffic Scenarios

Future background and future total analysis for the intersections within the study area will be over the horizon year of 2029.

Parking & Loading

The City of Toronto Zoning By-law 569-2013 and Zoning By-law 89-2022, which will be reviewed for parking and loading requirements. If a parking reduction is proposed, appropriate analyses and justification will be provided to illustrate that the proposed parking supply will meet the projected parking demand.

Transportation Demand Management

A Transportation Demand Management (TDM) plan will be provided in order to recommend measures that will aid in reducing single occupancy vehicle trips and increasing the mode share of alternative modes of transportation.

Site Plan Review

Site plan review will also be undertaken to ensure the vehicular movements can be accommodated at the proposed loading bay, parking lots, drive aisles, garage ramps, etc.

Should you have any comments with our assumptions or have any concerns, please do not hesitate to contact me at tchin@lea.ca.

Yours truly,

LEA CONSULTING LTD.

Timothy Chin, MSc(Eng), P.Eng.

Project Manager, Transportation Engineering

Timothy Chin

From: Patrick Fung <Patrick.Fung@toronto.ca>
Sent: January 29, 2024 4:12 PM
To: Timothy Chin; Ying Sun
Cc: Nixon Chan; Lukasz Pawlowski; Riad Rahman
Subject: RE: Transportation Impact Study (TIS) Terms of Reference (TOR): 1050 Markham Road, Toronto

External Sender

Hi Timothy,

Thanks for the email. I have already provided my comments to Ying to incorporate into her email below. In terms of the background developments, as there are several active applications along Markham Road, it's important to capture and assess these impacts. I have no issues with the 4 background applications included in your TOR, but I would add 1221 Markham Road to your table.

Best regards,
Patrick

From: Timothy Chin <TChin@lea.ca>
Sent: January 29, 2024 9:59 AM
To: Ying Sun <Ying.Sun6@toronto.ca>; Patrick Fung <Patrick.Fung@toronto.ca>
Cc: Nixon Chan <NChan@lea.ca>; Lukasz Pawlowski <Lukasz.Pawlowski@toronto.ca>; Riad Rahman <Riad.Rahman@toronto.ca>
Subject: [External Sender] RE: Transportation Impact Study (TIS) Terms of Reference (TOR): 1050 Markham Road, Toronto

Hi Ying Sun,

Thank you for your reply on the TOR.

Hi Patrick,

Please advise any comments from City's Transportation Planning, particularly on the background developments.

Thank you.

Timothy Chin, MSc(Eng), P.Eng.
Project Manager, Transportation Engineering
T: 905 470 0015 ext. 367 **E:** tchin@lea.ca **W:** www.LEA.ca
LEA Consulting Ltd.

From: Ying Sun <Ying.Sun6@toronto.ca>
Sent: Tuesday, January 16, 2024 9:45 AM
To: Timothy Chin <TChin@lea.ca>

Cc: Nixon Chan <NChan@lea.ca>; Lukasz Pawlowski <Lukasz.Pawlowski@toronto.ca>; Riad Rahman <riad.rahman@toronto.ca>; Patrick Fung <Patrick.Fung@toronto.ca>
Subject: RE: Transportation Impact Study (TIS) Terms of Reference (TOR): 1050 Markham Road, Toronto

External Sender

Hi Timothy,

According to the TOR dated January 5, 2024, please see the comments listed below.

Road Network Updates:

1. For Durham-Scarborough BRT (DSBRT), the configuration will be upgraded at Ellesmere Road and Markham Road. Please see the attached plan. The update should be considered for the intersection operation analysis at 2041 horizon year. (Metrolinx's 2041 Regional Transportation Plan)

2. A new public road will be established from Meadowglen Place to Ellesmere Road. Please conduct the traffic operation for this new intersection under future scenarios. The trip generated by subject and background developments should be properly assigned to the new intersection. Please refer to the application documents for 1125 Markham Road. Application Information Centre – City of Toronto

Signal warrant:

3. Please conduct a signal warrant for the intersection of Markham Road and Meadowglen Place under the future total condition. Currently this intersection is operated as RIRO with stop control.

Synchro:

4. For synchro inputs, please follow the City's Guideline for using Synchro 11. SOP Template (toronto.ca)

Internal Site Circulation:

5. The vehicle turning diagram should include all types of necessary vehicles (Emergency, Garbage, Passenger Car)

Identify improvements/modifications:

1. Identify improvements/modifications on the existing road networks impacted by this development such as road geometrics, signs, and pavement markings, and
2. Identify modifications/improvements of existing traffic control signals impacted by this development.

Transportation Planning:

6. Given its proximity to the planned DSBRT along Ellesmere Road, the TIS should acknowledge the future higher order transit nearby.
7. Given the proximity to existing transit infrastructure and bike lanes along Brimorton Drive, the TDM plan must acknowledge and address TGS v4 standards, especially as they pertain to Air Quality.

If a new traffic signal or signal timing update required to mitigate the impact:

- Provide a Traffic Signal control plan for the proposed signal work
- Provide a detailed signal cost estimate for the civil, electrical, and associated works.
- Provide financial security of the approved cost for the signal work in the form of a Letter of Credit.
- Responsible for carrying out the work through the City approved contractors.
- Be advised about the below high-level cost estimate (exact amount to be determined as per the finalized approved plan) for the Letter of Credit:

– New/modification of Permanent Signal: $385,000

- New/temporary/modification of the Permanent Signal: $437,000
- New/temporary/modifying permanent PXO: $150,000

- Be advised that the applicant will also be responsible for paying a one-time Maintenance fee for associated signal work. The fee for 2023 is $87,000. These fees are subject to an annual change and are available in Municipal Code Chapter 441 Appendix C - Schedule 2.
- Where any modification of the Traffic Signal time is proposed, the applicant is financially responsible for the implementation of such work. Existing signal timing cards, turning movement counts, and traffic signal control plan drawings can be purchased directly by contacting signaltimings@toronto.ca. Where such improvements are proposed, the applicant has to:

- Submit a table identifying the proposed signal timing adjustments.
- Pay for the implementation work as determined by the Traffic System Operations (TSO) Unit of Transportation Services.
- Where any installation/modification of the signage and pavement marking works are proposed within the City's right of way, the applicant is financially responsible for the implementation of such work. Where such improvements are proposed, the applicant has to:
- Submit a detailed Signage and Pavement Marking Plan
- Pay for the implementation work as determined by the Signage and Pavement Marking Unit of Transportation Services.

Please let me know if you have any questions or concerns.

Best Regards,

Ying Sun, M.Eng, P.Eng.
Transportation Engineering Coordinator
Transportation Development Planning & Review (Area 1)
150 Borough Dr, Scarborough Civic Centre, Flr 2
Toronto, ON M1P 4N7
416-396-8141
ying.sun6@toronto.ca

TORONTO Transportation Services

From: Timothy Chin <TChin@lea.ca>
Sent: January 8, 2024 2:57 PM
To: Lukasz Pawlowski <Lukasz.Pawlowski@toronto.ca>; Riad Rahman <Riad.Rahman@toronto.ca>; Patrick Fung <Patrick.Fung@toronto.ca>; Ying Sun <Ying.Sun6@toronto.ca>
Cc: Nixon Chan <NChan@lea.ca>
Subject: [External Sender] RE: Transportation Impact Study (TIS) Terms of Reference (TOR): 1050 Markham Road, Toronto

Hi Ying Sun,

As confirmed with you about the email address, please see attached TOR for the captioned project for your review and advise if you have any comments.

Thank you.

Timothy Chin, MSc(Eng), P.Eng.
Project Manager, Transportation Engineering
T: 905 470 0015 ext. 367 **E:** tchin@lea.ca **W:** www.LEA.ca

LEA Consulting Ltd.

From: Timothy Chin
Sent: Friday, January 5, 2024 2:36 PM
To: Lukasz Pawlowski <Lukasz.Pawlowski@toronto.ca>; Riad Rahman <riad.rahman@toronto.ca>; ying.sun@toronto.ca; patrick.fung@toronto.ca
Cc: Nixon Chan <NChan@lea.ca>
Subject: RE: Transportation Impact Study (TIS) Terms of Reference (TOR): 1050 Markham Road, Toronto

Hi all,

Further to the PAC meeting held on December 19, 2023, for the captioned project, please find attached the updated Terms of Reference (TOR) for your review and advise if you have any comments.

Thank you.

Timothy Chin, MSc(Eng), P.Eng.
Project Manager, Transportation Engineering
T: 905 470 0015 ext. 367 **E:** tchin@lea.ca **W:** www.LEA.ca
LEA Consulting Ltd.

From: Timothy Chin
Sent: Friday, October 13, 2023 10:55 AM
To: Lukasz Pawlowski <Lukasz.Pawlowski@toronto.ca>; Riad Rahman <riad.rahman@toronto.ca>
Cc: Nixon Chan <NChan@lea.ca>
Subject: Transportation Impact Study (TIS) Terms of Reference (TOR): 1050 Markham Road, Toronto

Hi Lukasz and Riad,

We have recently been retained to conduct a Transportation Impact Study (TIS) for the proposed residential development at 1050 Markham Road in the City of Toronto.

Please see attached Terms of Reference (TOR) for your review and advise if you have any comments.

Thank you.

Timothy Chin, MSc(Eng), P.Eng.
Project Manager, Transportation Engineering
LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor | Markham, ON | L3R 9R9
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APPENDIX B

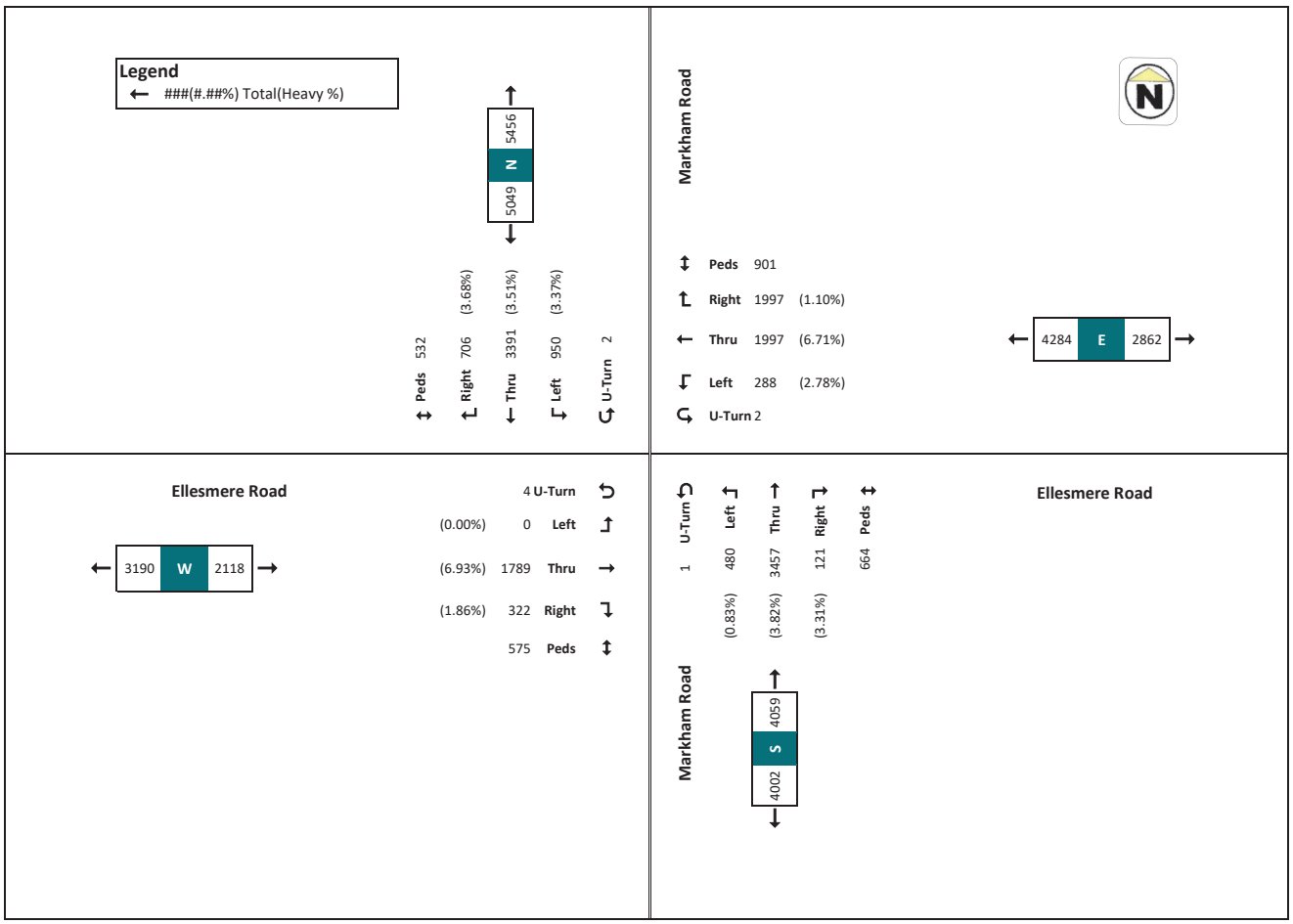
Traffic Data & Signal Timing Plan

LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Ellesmere Road
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24054

Turning Movement Count - Markham Road & Ellesmere Road

	Markham Road Southbound						Ellesmere Road Westbound						Markham Road Northbound						Ellesmere Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	38	129	45	19	212	0	15	162	60	41	237	0	18	171	3	40	192	2	29	45	7	27	83	724
7:45	0	38	181	67	17	286	0	12	172	59	58	243	0	23	202	2	31	227	0	24	58	5	24	87	843
Hourly Total	0	76	310	112	36	498	0	27	334	119	99	480	0	41	373	5	71	419	2	53	103	12	51	170	1567
8:00	0	46	171	47	6	264	0	14	169	68	73	251	0	36	224	8	37	267	0	32	67	13	12	112	894
8:15	1	53	152	47	30	253	0	19	151	86	70	256	1	26	235	7	29	258	0	35	78	10	16	123	891
8:30	0	41	185	50	30	276	0	24	175	71	53	270	0	26	275	7	54	258	0	22	78	6	50	107	911
8:45	0	56	243	52	25	351	2	16	148	50	49	216	0	34	179	5	25	218	0	24	94	15	45	133	918
Hourly Total	1	196	751	196	91	1144	2	73	643	275	245	993	0	123	851	27	145	1001	0	113	318	44	123	475	3613
9:00	0	47	251	59	29	357	0	16	106	51	44	173	0	30	191	3	44	224	1	29	73	10	43	113	867
9:15	1	55	178	50	22	284	0	17	101	59	24	177	0	21	165	8	27	194	1	35	69	12	31	117	772
Hourly Total	1	102	429	109	51	641	0	33	207	110	68	350	0	51	356	11	71	418	2	64	142	22	74	230	1639
* Break *																									
16:00	0	74	173	0	39	247	0	12	84	48	51	144	0	30	218	2	0	250	0	45	115	22	0	182	823
16:15	0	72	187	18	46	277	0	22	101	61	55	184	0	32	225	0	35	257	0	44	174	37	26	255	973
16:30	0	64	198	22	59	284	0	15	102	49	48	166	0	39	211	4	51	254	0	51	161	35	52	247	951
16:45	0	80	229	37	44	346	0	17	107	46	69	170	0	38	244	12	39	294	0	51	163	27	50	241	1051
Hourly Total	0	290	787	77	188	1154	0	66	394	204	223	664	0	139	898	18	125	1055	0	191	613	121	128	925	3798
17:00	0	71	303	55	46	429	0	19	108	27	54	154	0	25	230	22	66	277	1	56	153	24	52	234	1094
17:15	0	73	242	45	49	360	0	25	114	60	61	199	0	28	245	8	86	287	0	61	173	42	52	281	1127
17:30	0	67	286	45	39	398	0	22	114	58	82	200	0	28	270	19	51	317	1	38	166	28	44	277	1192
17:45	0	75	283	67	34	425	0	22	83	53	69	158	0	39	234	11	55	284	1	49	121	24	51	195	1062
Hourly Total	0	286	1114	212	166	1612	0	88	419	203	266	711	0	120	979	60	258	1165	3	204	613	123	199	943	4431
Grand Total	2	950	3391	706	532	5049	2	288	1997	911	901	3198	0	480	3457	121	664	4058	7	625	1789	322	575	2743	15048
Approach %	0.0%	18.8%	67.2%	14.0%			0.1%	9.0%	62.4%	28.5%		-	0.0%	11.8%	85.2%	3.0%			0.3%	22.8%	65.2%	11.7%			
Total %	0.0%	6.3%	22.5%	4.7%		33.6%	0.0%	1.9%	13.3%	6.1%		21.3%	0.0%	3.2%	23.0%	0.8%		27.0%	0.0%	4.2%	11.9%	2.1%		18.2%	
Lights	2	918	3272	680		4872	2	280	1863	889		3034	1	476	3325	117		3919	7	612	1665	316		2600	14425
% Lights	100.0%	96.6%	96.5%	96.3%		96.5%	100.0%	97.2%	93.3%	97.6%		94.9%		99.2%	96.2%	96.7%		96.6%	100.0%	97.9%	93.1%	98.1%		94.8%	95.9%
Buses	-	14	85	4		103	-	4	110	10		124	-	2	88	1		91	-	5	111	3		119	437
% Buses	#VALUE!	1.5%	2.5%	0.6%		2.0%		1.4%	5.5%	1.1%		3.9%		0.4%	2.5%	0.8%		2.2%		0.8%	6.2%	0.9%		4.3%	2.9%
Trucks	-	18	34	22		74	-	4	24	12		40	-	2	44	3		49	-	8	13	3		24	187
% Trucks	#VALUE!	1.9%	1.0%			1.5%		1.4%	1.2%	1.3%		1.3%		0.4%	1.3%	2.5%		1.2%		1.3%	0.7%	0.9%		0.9%	1.2%
Bicycles	-	-	-	-	4	4	-	-	-	-	0	0	-	-	-	-	8	8	-	-	-	-	2	2	14
Pedestrians	-	-	-	-	532	-	-	-	-	-	897	-	-	-	-	-	664	-	-	-	-	-	575	-	2668

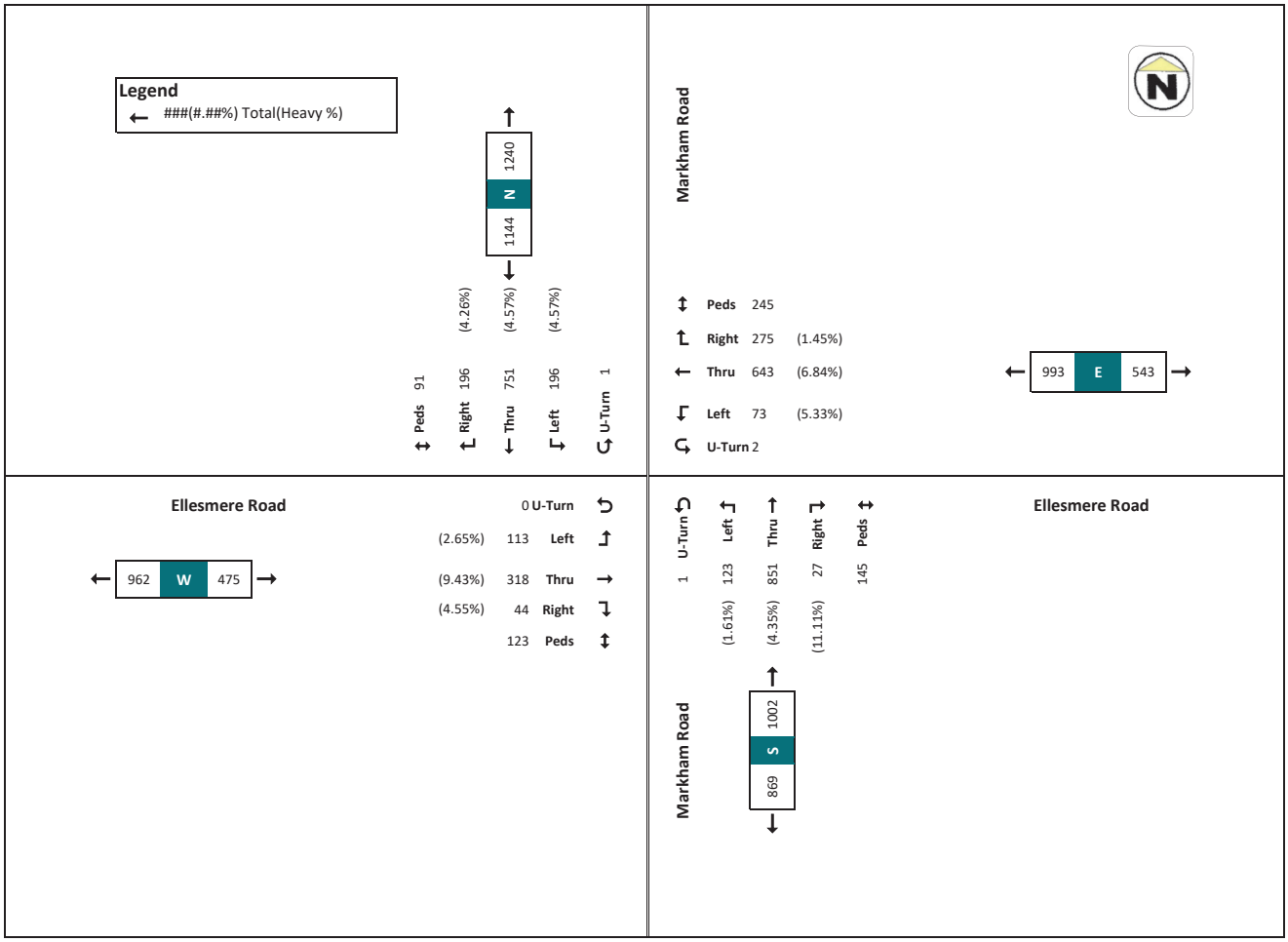


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Ellesmere Road
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24054

AM Peak Hour - Markham Road & Ellesmere Road

	Markham Road Southbound						Ellesmere Road Westbound						Markham Road Northbound						Ellesmere Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:00	0	46	171	47	6	264	0	14	169	68	73	251	0	35	224	8	37	267	0	32	67	13	12	112	894
8:15	1	53	152	47	30	253	0	19	151	86	70	256	1	26	225	7	29	259	0	35	78	10	16	123	891
8:30	0	41	185	50	30	276	0	24	175	71	53	270	0	28	223	7	54	258	0	22	79	6	50	107	911
8:45	0	56	243	52	25	351	2	16	148	50	49	216	0	34	179	5	25	218	0	24	94	15	45	133	918
Hourly Total	1	196	751	196	91	1144	2	73	643	275	245	993	0	123	851	27	145	1001	0	113	318	44	123	475	3634
Approach %	0.1%	17.1%	65.6%	17.1%	-	-	0.2%	7.4%	64.8%	27.7%	-	-	0.0%	12.3%	85.0%	2.7%	-	-	0.0%	23.8%	66.9%	9.3%	-	-	-
Total %	0.0%	5.4%	20.8%	5.4%	-	31.7%	0.1%	2.0%	17.8%	7.6%	-	27.5%	0.0%	3.4%	23.5%	0.7%	-	27.7%	0.0%	3.1%	8.8%	1.2%	-	13.1%	
PHF	0.25	0.88	0.77	0.94	-	0.81	0.25	0.76	0.92	0.8	-	0.92	0	0.88	0.95	0.84	-	0.94	0	0.81	0.85	0.73	-	0.89	0.98
Lights	1	187	719	190	-	1097	2	69	599	271	-	941	1	121	814	24	-	960	0	110	288	42	-	440	3438
% Lights	100.0%	95.4%	95.7%	96.9%	-	95.9%	-	94.5%	93.2%	98.5%	-	94.8%	-	98.4%	95.7%	88.9%	-	95.9%	-	97.3%	90.6%	95.5%	-	92.6%	95.1%
Buses	-	3	24	1	-	28	-	3	32	4	-	39	-	2	25	1	-	28	-	2	25	1	-	28	123
% Buses	#VALUE!	1.5%	3.2%	0.5%	-	2.4%	-	4.1%	5.0%	1.5%	-	3.9%	-	1.6%	2.9%	3.7%	-	2.8%	-	1.8%	7.9%	2.3%	-	5.9%	3.4%
Trucks	-	6	8	5	-	19	-	1	12	0	-	13	-	0	12	2	-	14	-	1	5	1	-	7	53
% Trucks	#VALUE!	3.1%	1.1%	2.6%	-	1.7%	#VALUE!	1.4%	1.9%	0.0%	-	1.3%	-	0.0%	1.4%	7.4%	-	1.4%	-	0.9%	1.6%	2.3%	-	1.5%	1.5%
Bicycles	-	-	-	-	1	1	-	-	-	-	0	0	-	-	-	-	5	5	-	-	-	-	0	0	6
Pedestrians	-	-	-	-	91		-	-	-	-	245	-	-	-	-	-	1		-	-	-	-	123	-	460

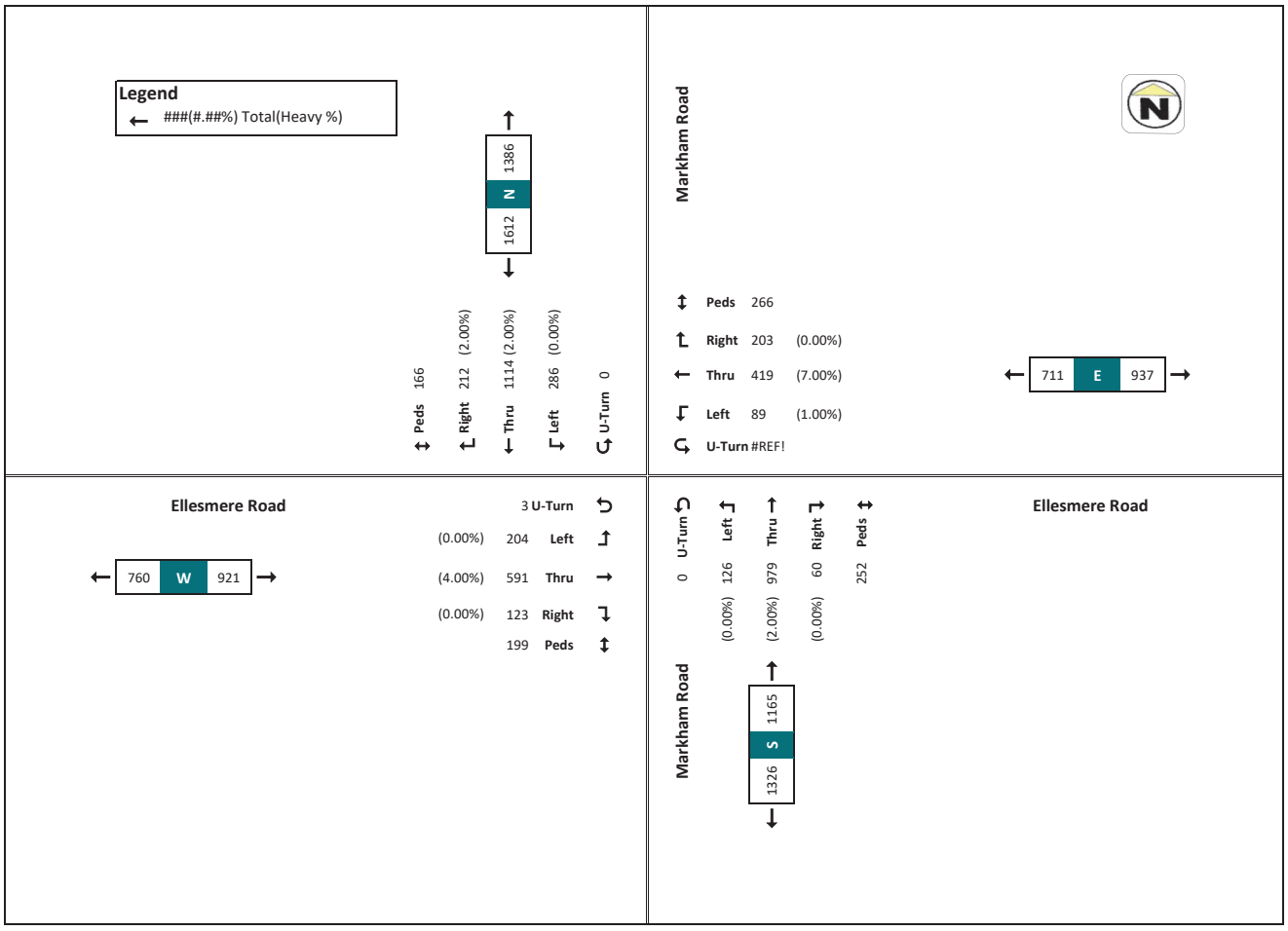


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Ellesmere Road
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24054

PM Peak Hour - Markham Road & Ellesmere Road

	Markham Road Southbound						Ellesmere Road Westbound						Markham Road Northbound						Ellesmere Road Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
17:00	0	71	303	55	46	429	0	19	108	27	54	154	0	25	230	22	66	277	1	56	153	24	52	234	1094
17:15	0	73	242	45	47	360	0	25	114	60	61	199	0	34	245	8	80	287	0	61	173	47	52	281	1127
17:30	0	67	286	45	39	398	0	22	114	63	82	200	0	28	270	19	51	317	1	38	165	28	44	233	1148
17:45	0	75	283	67	34	425	0	22	83	53	69	158	0	39	234	11	55	284	1	49	121	24	51	195	1062
Hourly Total	0	286	1114	212	166	1612	0	89	419	203	266	711	0	126	979	60	252	1165	3	204	613	123	199	943	4431
Approach %	0.0%	17.7%	69.1%	13.2%			0.0%	12.5%	58.9%	28.6%			0.0%	10.8%	84.0%	5.2%			0.3%	21.6%	65.0%	13.0%			
Total %	0.0%	6.5%	25.1%	4.8%		36.4%	0.0%	2.0%	9.5%	4.6%		16.0%	0.0%	2.8%	22.1%	1.4%		26.3%	0.1%	4.6%	13.8%	2.8%		21.3%	
PHF	0	0.95	0.92	0.79		0.94	0	0.89	0.92	0.81		0.89	0	0.81	0.91	0.68		0.92	0.75	0.84	0.89	0.65		0.84	0.96
Lights	0	281	1092	207		1580	0	88	388	203		679	0	126	956	60		1142	3	204	591	123		921	4325
% Lights	-	99.7%	98.0%	97.6%		98.3%	-	98.9%	92.6%	99.5%		95.4%	-	100.0%	97.7%	100.0%		98.0%	-	100.0%	96.4%	100.0%		97.7%	97.6%
Buses	-	3	24	1		28	-	0	26	0		26	-	0	17	0		17	-	0	21	0		21	92
% Buses	-	1.0%	2.2%	0.5%		1.7%	-	0.0%	6.2%	0.0%		3.7%	-	0.0%	1.7%	0.0%		1.5%	-	0.0%	3.4%	0.0%		2.2%	2.1%
Trucks	-	1	6	5		12	-	1	5	1		7	-	0	6	0		6	-	0	1	0		1	26
% Trucks	-	0.3%	0.5%	2.4%		0.7%	-	1.1%	1.2%	0.5%		1.0%	-	0.0%	0.6%	0.0%		0.5%	-	0.0%	0.2%	0.0%		0.1%	0.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	2	-	-	-	-	1	1	3
Pedestrians	-	-	-	-	166	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	169

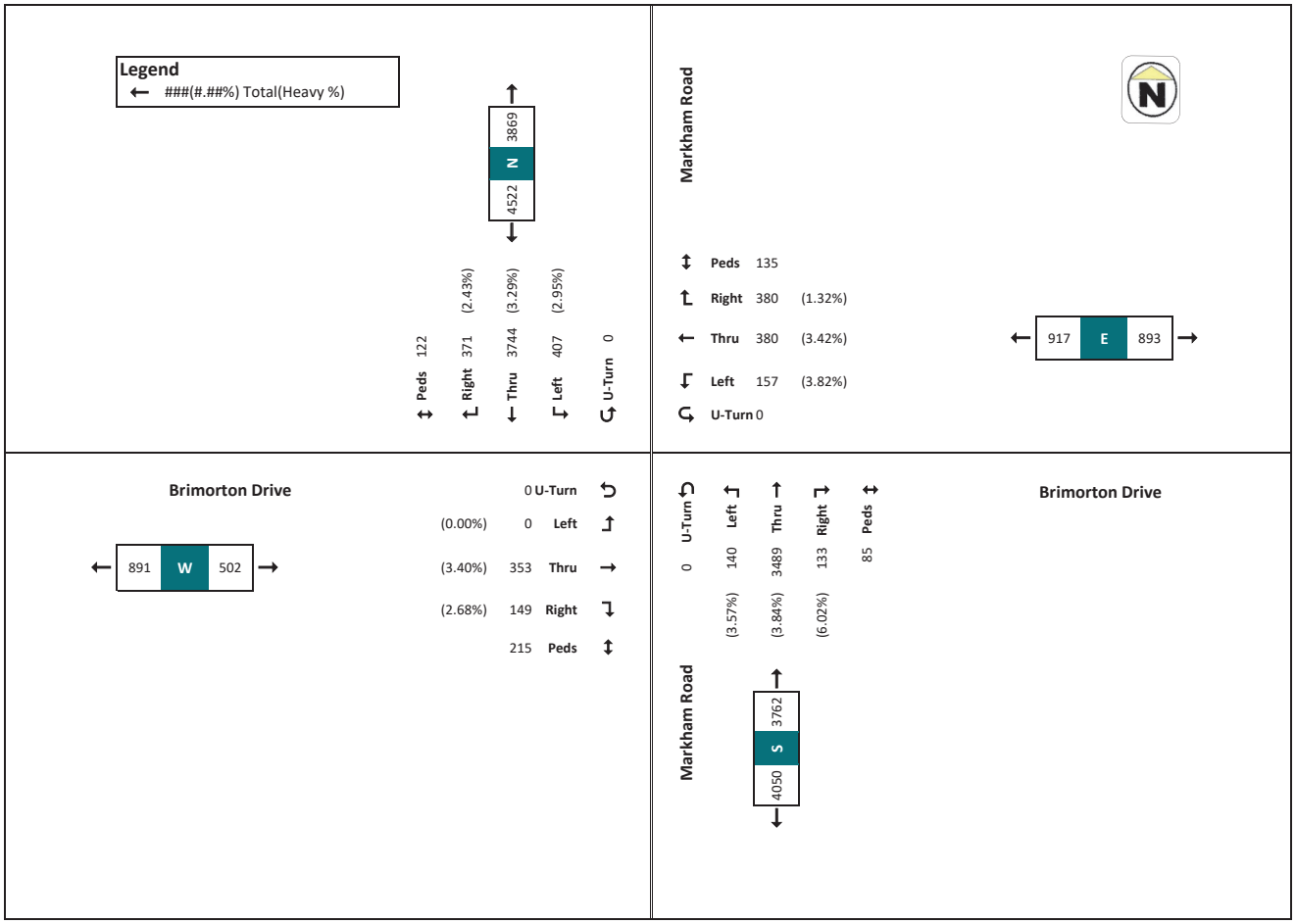


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Brimorton Drive
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24055

Turning Movement Count - Markham Road & Brimorton Drive

	Markham Road Southbound						Brimorton Drive Westbound						Markham Road Northbound						Brimorton Drive Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	13	146	11	7	170	0	6	25	15	6	46	0	3	178	1	3	182	0	9	5	2	9	16	414
7:45	0	17	162	25	9	204	0	14	39	19	6	72	0	4	178	3	7	185	0	17	9	2	13	28	489
Hourly Total	0	30	308	36	16	374	0	20	64	34	12	118	0	7	356	4	10	367	0	26	14	4	22	44	903
8:00	0	16	177	20	3	213	0	12	31	21	1	65	0	10	212	15	2	239	0	14	31	0	7	54	571
8:15	0	20	177	25	1	222	0	20	35	26	6	73	0	10	214	6	6	230	0	19	22	10	11	51	576
8:30	0	13	176	24	3	208	0	48	28	16	2	94	0	7	211	6	1	224	0	18	24	8	15	51	577
8:45	0	14	215	20	7	249	0	14	27	27	8	68	0	3	162	4	7	169	0	14	16	4	4	34	520
Hourly Total	0	62	741	89	17	892	0	48	122	90	26	260	0	27	804	31	21	862	0	65	93	32	37	190	2204
9:00	0	19	218	23	4	260	0	5	14	14	4	33	0	9	200	5	4	214	0	12	13	3	5	28	535
9:15	0	16	177	23	3	216	0	6	21	18	4	45	0	8	164	7	6	179	0	14	10	6	11	30	470
Hourly Total	0	35	395	46	7	476	0	11	35	32	8	78	0	17	364	12	10	393	0	26	23	9	16	58	1005
* Break *																									
16:00	0	27	244	18	8	289	0	5	17	14	12	36	0	16	271	15	3	302	0	13	28	20	33	61	688
16:15	0	35	304	31	8	370	0	10	17	18	11	45	0	6	228	15	7	249	0	21	23	12	7	56	720
16:30	0	42	312	23	17	377	0	13	17	18	11	48	0	11	237	7	3	255	0	11	34	15	17	60	740
16:45	0	37	339	29	11	405	0	12	22	20	6	54	0	9	248	11	3	268	0	15	28	13	11	56	783
Hourly Total	0	141	1199	101	44	1441	0	40	73	70	40	183	0	42	984	48	16	1074	0	60	113	60	68	233	2931
17:00	0	37	300	12	8	349	0	10	18	12	8	40	0	10	229	13	9	252	0	17	28	8	17	53	694
17:15	0	33	269	25	10	345	0	11	23	15	12	61	0	14	235	7	5	261	0	14	26	13	20	73	748
17:30	0	34	267	31	17	332	0	20	23	20	5	68	0	14	268	6	4	292	0	21	31	8	17	61	753
17:45	0	36	246	31	6	313	0	7	20	21	5	48	0	14	218	12	5	244	0	6	25	14	16	45	650
Hourly Total	0	139	1101	99	38	1339	0	38	86	71	30	195	0	47	981	38	28	1066	0	58	110	44	72	212	2812
Grand Total	0	407	3744	371	122	4522	0	157	380	297	135	834	0	140	3489	133	85	3762	0	235	353	149	215	737	9855
Approach %	0.0%	9.0%	82.8%	8.2%			0.0%	18.8%	45.6%	35.6%		-	0.0%	3.7%	92.7%	3.5%			0.0%	31.9%	47.9%	20.2%			
Total %	0.0%	4.1%	38.0%	3.8%		45.9%	0.0%	1.6%	3.9%	3.0%		8.5%	0.0%	1.4%	35.4%	1.3%		38.2%	0.0%	2.4%	3.6%	1.5%		7.5%	
Lights	0	395	3621	362		4378	0	151	367	292		810	0	135	3355	125		3615	0	230	341	145		716	9519
% Lights	-	97.1%	96.7%	97.6%		96.8%	-	96.2%	96.6%	98.3%		97.1%	-	96.4%	96.2%	94.0%		96.1%	-	97.9%	96.6%	97.3%		97.2%	96.6%
Buses	-	9	78	8		95	-	5	12	1		18	-	4	89	4		97	-	2	10	3		15	225
% Buses	-	2.2%	2.1%	2.2%		2.1%	-	3.2%	3.2%	0.3%		2.2%	-	2.9%	2.6%	3.0%		2.6%	-	0.9%	2.8%	2.0%		2.0%	2.3%
Trucks	-	3	45	1		49	-	1	1	4		6	-	1	45	4		50	-	3	2	1		6	111
% Trucks	-	0.7%	1.2%	-		1.1%	-	0.6%	0.3%	1.3%		0.7%	-	0.7%	1.3%	3.0%		1.3%	-	1.3%	0.6%	0.7%		0.8%	1.1%
Bicycles	-	-	-	-	1	1	-	-	-	-	2	2	-	-	-	-	5	5	-	-	-	-	9	9	17
Pedestrians	-	-	-	-	122	-	-	-	-	-	133	-	-	-	-	-	85	-	-	-	-	-	215	-	555

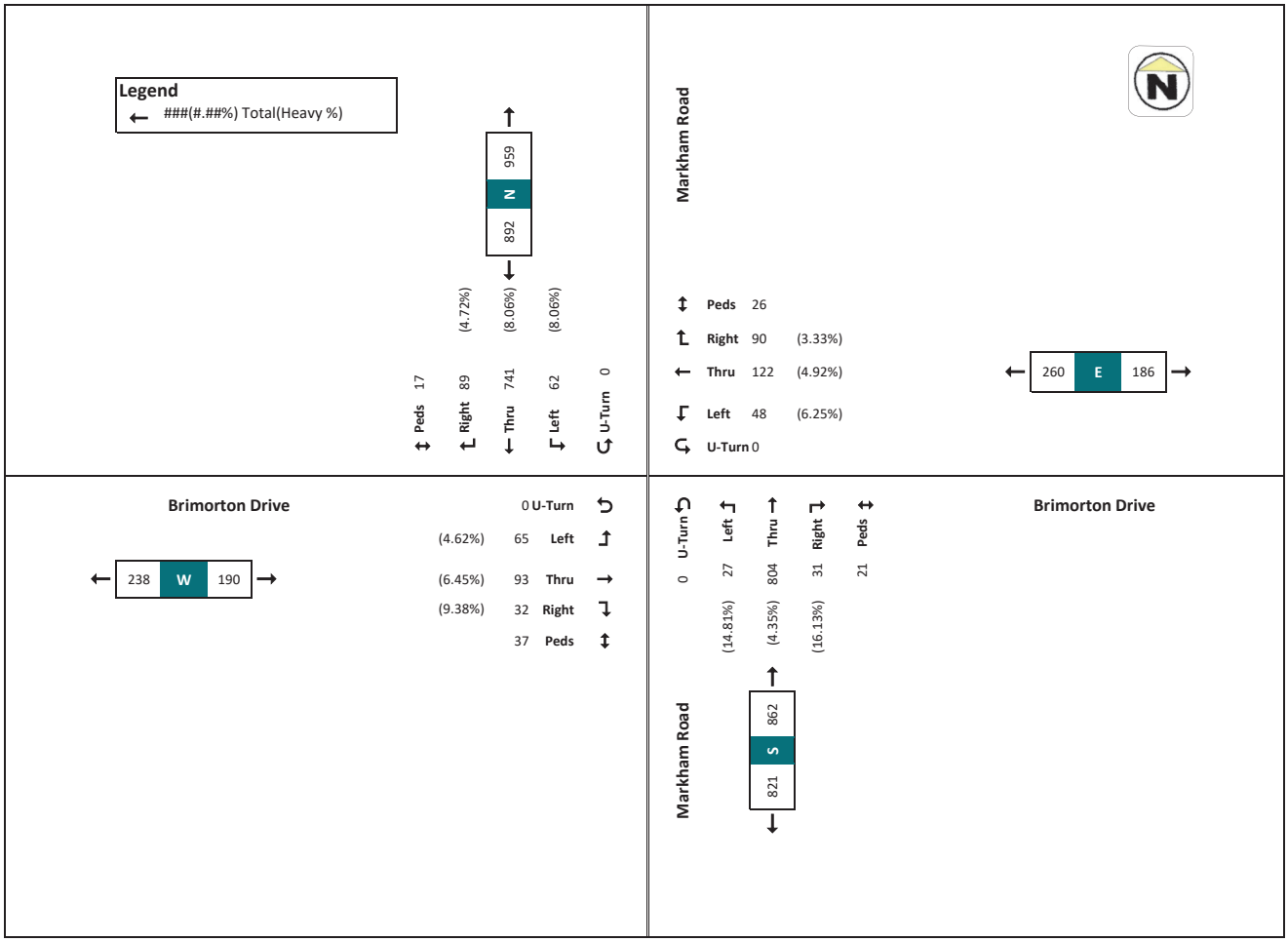


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Brimorton Drive
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24055

AM Peak Hour - Markham Road & Brimorton Drive

	Markham Road Southbound						Brimorton Drive Westbound						Markham Road Northbound						Brimorton Drive Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:00	0	16	177	20	3	213	0	13	31	21	7	65	0	7	217	15	7	239	0	14	31	9	7	54	571
8:15	0	20	177	25	5	222	0	12	35	26	4	73	0	10	214	6	6	230	0	19	22	10	11	51	576
8:30	0	12	172	24	3	208	0	9	29	16	7	54	0	7	211	6	3	224	0	18	24	9	15	51	537
8:45	0	14	215	20	7	249	0	14	27	27	8	68	0	3	162	4	7	169	0	14	16	4	4	34	520
Hourly Total	0	62	741	89	17	892	0	48	122	90	26	260	0	27	804	31	21	862	0	65	93	32	37	190	2204
Approach %	0.0%	7.0%	83.1%	10.0%	-	-	0.0%	18.5%	46.9%	34.6%	-	-	0.0%	3.1%	93.3%	3.6%	-	-	0.0%	34.2%	48.9%	16.8%	-	-	-
Total %	0.0%	2.8%	33.6%	4.0%	-	40.5%	0.0%	2.2%	5.5%	4.1%	-	11.8%	0.0%	1.2%	36.5%	1.4%	-	39.1%	0.0%	2.9%	4.2%	1.5%	-	8.6%	-
PHF	0	0.78	0.86	0.89	-	0.9	0	0.86	0.87	0.83	-	0.89	0	0.68	0.93	0.52	-	0.9	0	0.86	0.75	0.8	-	0.88	0.96
Lights	0	57	706	86	-	849	0	45	116	87	-	248	0	23	769	26	-	818	0	62	87	29	-	178	2093
% Lights	-	91.9%	95.3%	96.6%	-	95.2%	-	93.8%	95.1%	96.7%	-	95.4%	-	85.2%	95.6%	83.9%	-	94.9%	-	95.4%	93.5%	90.6%	-	93.7%	95.0%
Buses	-	4	22	2	-	28	-	3	5	1	-	9	-	4	26	2	-	32	-	1	6	2	-	9	78
% Buses	-	6.5%	3.0%	2.2%	-	3.1%	-	6.3%	4.1%	1.1%	-	3.5%	-	14.8%	3.2%	6.5%	-	3.7%	-	1.5%	6.5%	6.3%	-	4.7%	3.5%
Trucks	-	1	13	1	-	15	-	0	1	2	-	3	-	0	9	3	-	12	-	2	0	1	-	3	33
% Trucks	-	1.6%	1.8%	1.1%	-	1.7%	-	0.0%	0.8%	2.2%	-	1.2%	-	0.0%	1.1%	9.7%	-	1.4%	-	3.1%	0.0%	3.1%	-	1.6%	1.5%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	4	4	-	-	-	-	0	0	4
Pedestrians	-	-	-	-	17	-	-	-	-	-	26	-	-	-	-	-	0	-	-	-	-	-	37	-	80

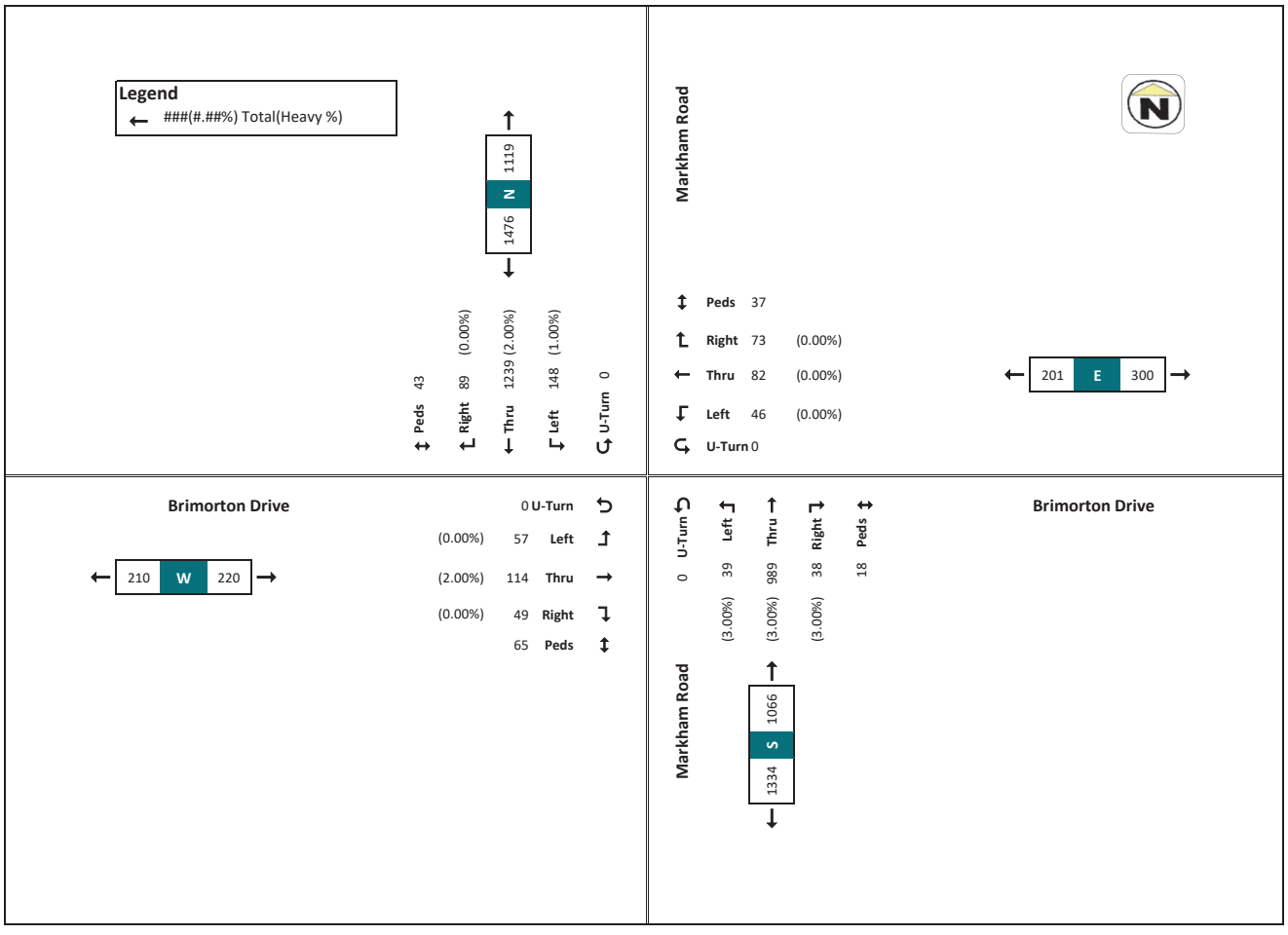


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Brimorton Drive
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24055

PM Peak Hour - Markham Road & Brimorton Drive

	Markham Road Southbound						Brimorton Drive Westbound						Markham Road Northbound						Brimorton Drive Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:30	0	42	312	23	17	377	0	13	17	18	11	48	0	11	237	7	3	255	0	11	34	15	17	60	740
16:45	0	37	339	29	11	405	0	12	22	20	6	54	0	9	248	11	3	268	0	15	28	13	11	56	783
17:00	0	37	300	12	8	349	0	10	18	12	8	40	0	10	229	13	0	252	0	17	28	8	17	53	694
17:15	0	32	288	25	7	345	0	11	25	23	12	59	0	9	275	7	3	291	0	14	26	13	20	53	748
Hourly Total	0	148	1239	89	43	1476	0	46	82	73	37	201	0	39	989	38	18	1066	0	57	116	49	65	222	2965
Approach %	0.0%	10.0%	83.9%	6.0%	-	-	0.0%	22.9%	40.8%	36.3%	-	-	0.0%	3.7%	92.8%	3.6%	-	-	0.0%	25.7%	52.3%	22.1%	-	-	
Total %	0.0%	5.0%	41.8%	3.0%	-	49.8%	0.0%	1.6%	2.8%	2.5%	-	6.8%	0.0%	1.3%	33.4%	1.3%	-	36.0%	0.0%	1.9%	3.9%	1.7%	-	7.5%	
PHF	0	0.88	0.91	0.77	-	0.91	0	0.88	0.82	0.79	-	0.85	0	0.89	0.9	0.73	-	0.92	0	0.84	0.83	0.82	-	0.93	0.95
Lights	0	147	1220	89	-	1456	0	46	82	73	-	201	0	38	963	37	-	1038	0	57	114	49	-	220	2915
% Lights	-	99.3%	98.5%	100.0%	-	98.6%	-	100.0%	100.0%	100.0%	-	100.0%	-	97.4%	97.4%	97.4%	-	97.4%	-	100.0%	98.3%	100.0%	-	99.1%	98.3%
Buses	-	4	22	2	-	28	-	0	0	0	-	0	-	0	17	0	-	17	-	0	2	0	-	2	47
% Buses	-	2.7%	1.8%	2.2%	-	1.9%	-	0.0%	0.0%	0.0%	-	0.0%	-	0.0%	1.7%	0.0%	-	1.6%	-	0.0%	1.7%	0.0%	-	0.9%	1.6%
Trucks	-	0	5	0	-	5	-	0	0	0	-	0	-	1	9	1	-	11	-	0	0	0	-	0	16
% Trucks	-	0.0%	0.4%	0.0%	-	0.3%	-	0.0%	0.0%	0.0%	-	0.0%	-	2.6%	0.9%	2.6%	-	1.0%	-	0.0%	0.0%	0.0%	-	0.0%	0.5%
Bicycles	-	-	-	-	1	1	-	-	-	-	2	2	-	-	-	-	0	0	-	-	-	-	5	5	8
Pedestrians	-	-	-	-	43	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	43

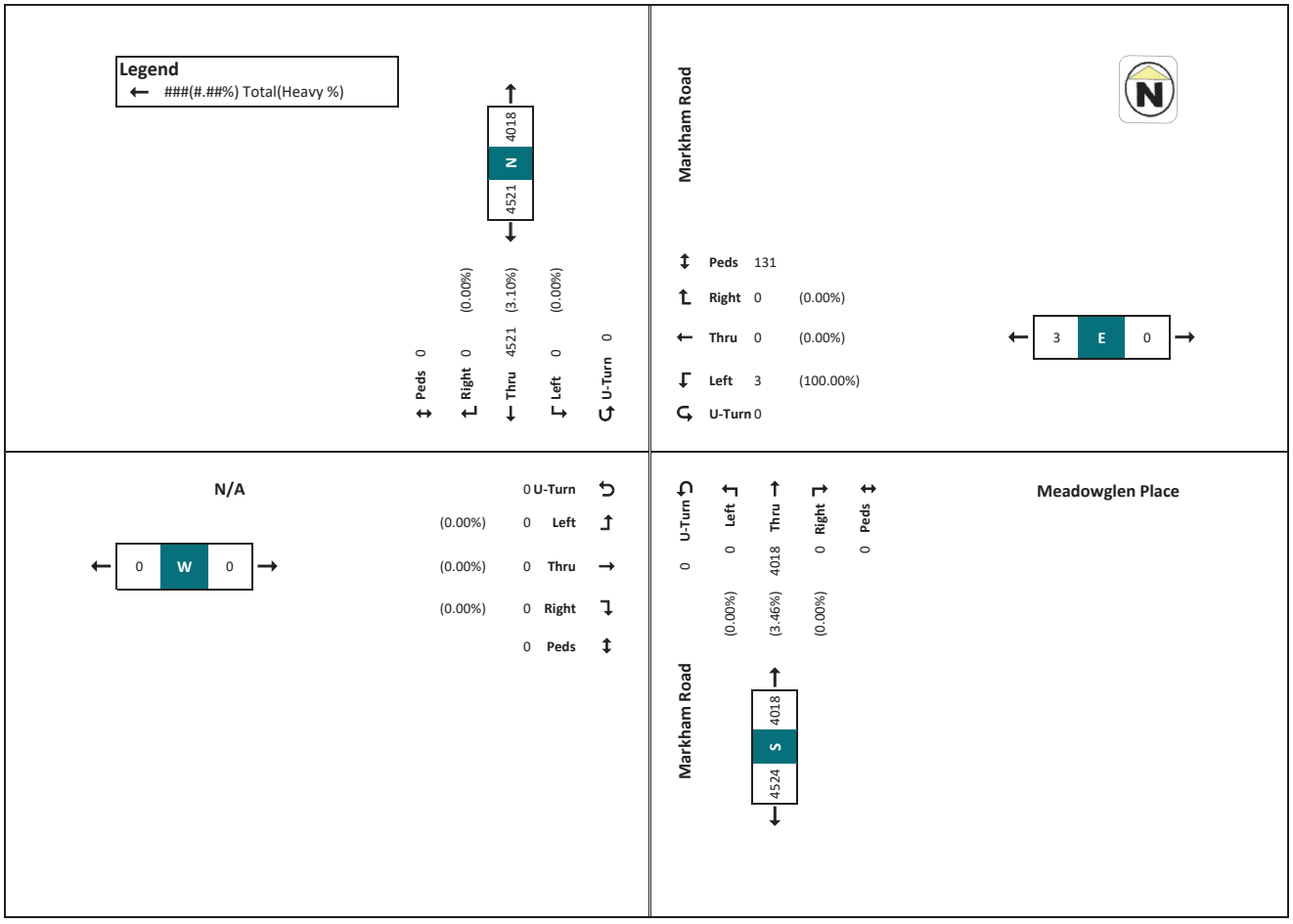


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Meadowglen Place
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24056

Turning Movement Count - Markham Road & Meadowglen Place

	Markham Road Southbound						Meadowglen Place Westbound						Markham Road Northbound						N/A Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	0	170	0	0	170	0	1	0	14	7	15	0	0	203	0	0	203	0	0	0	0	0	0	388
7:45	0	0	204	0	0	204	0	0	0	21	8	21	0	0	213	0	0	213	0	0	0	0	0	0	438
Hourly Total	0	0	374	0	0	374	0	1	0	35	15	36	0	0	416	0	0	416	0	0	0	0	0	0	826
8:00	0	0	211	0	0	211	0	0	0	16	10	16	0	0	250	0	0	250	0	0	0	0	0	0	477
8:15	0	0	221	0	0	221	0	0	0	19	6	19	0	0	259	0	0	259	0	0	0	0	0	0	499
8:30	0	0	208	0	0	208	0	0	0	29	5	29	0	0	244	0	0	244	0	0	0	0	0	0	481
8:45	0	0	249	0	0	249	0	1	0	12	6	13	0	0	202	0	0	202	0	0	0	0	0	0	464
Hourly Total	0	0	889	0	0	889	0	1	0	76	27	77	0	0	955	0	0	955	0	0	0	0	0	0	1921
9:00	0	0	260	0	0	260	0	0	0	8	0	8	0	0	227	0	0	227	0	0	0	0	0	0	495
9:15	0	0	218	0	0	218	0	0	0	7	1	7	0	0	196	0	0	196	0	0	0	0	0	0	421
Hourly Total	0	0	478	0	0	478	0	0	0	15	1	15	0	0	423	0	0	423	0	0	0	0	0	0	916
* Break *																									
16:00	0	0	292	0	0	292	0	1	0	14	14	15	0	0	299	0	0	299	0	0	0	0	0	0	606
16:15	0	0	369	0	0	369	0	0	0	19	10	19	0	0	267	0	0	267	0	0	0	0	0	0	655
16:30	0	0	374	0	0	374	0	0	0	12	13	12	0	0	267	0	0	267	0	0	0	0	0	0	653
16:45	0	0	403	0	0	403	0	0	0	6	13	6	0	0	283	0	0	283	0	0	0	0	0	0	692
Hourly Total	0	0	1438	0	0	1438	0	1	0	51	50	52	0	0	1116	0	0	1116	0	0	0	0	0	0	2606
17:00	0	0	350	0	0	350	0	0	0	11	9	11	0	0	258	0	0	258	0	0	0	0	0	0	619
17:15	0	0	347	0	0	347	0	0	0	15	12	15	0	0	312	0	0	312	0	0	0	0	0	0	674
17:30	0	0	333	0	0	333	0	0	0	15	3	15	0	0	292	0	0	292	0	0	0	0	0	0	640
17:45	0	0	312	0	0	312	0	0	0	8	14	8	0	0	246	0	0	246	0	0	0	0	0	0	566
Hourly Total	0	0	1342	0	0	1342	0	0	0	49	38	49	0	0	1108	0	0	1108	0	0	0	0	0	0	2499
Grand Total	0	0	4521	0	0	4521	0	3	0	226	131	229	0	0	4018	0	0	4018	0	0	0	0	0	0	8768
Approach %	0.0%	0.0%	100.0%	0.0%			0.0%	1.3%	0.0%	98.7%		-	0.0%	0.0%	100.0%	0.0%									
Total %	0.0%	0.0%	51.6%	0.0%		51.6%	0.0%	0.0%	0.0%	2.6%		2.6%	0.0%	0.0%	45.8%	0.0%		45.8%	0.0%	0.0%	0.0%	0.0%		0.0%	
Lights	0	0	4381	0		4381	0	0	0	222		222	0	0	3879	0		3879	0	0	0	0		0	8482
% Lights	-	-	96.9%	-		96.9%	-	0.0%	-	98.2%		96.9%	-	-	96.5%	-		96.5%	-	-	-	-		-	96.7%
Buses	0	0	92	0		92	0	0	0	3		3	0	0	88	0		88	0	0	0	0		0	183
% Buses	-	-	2.0%	-		2.0%	-	0.0%	-	1.3%		1.3%	-	-	2.2%	-		2.2%	-	-	-	-		-	2.1%
Trucks	0	0	48	0		48	0	3	0	1		4	0	0	51	0		51	0	0	0	0		0	103
% Trucks	-	-	1.1%	-		1.1%	-	100.0%	-	0.4%		1.7%	-	-	1.3%	-		1.3%	-	-	-	-		-	1.2%
Bicycles					0	0					0	0					0	0					0	0	0
Pedestrians					0						139						0						0		139

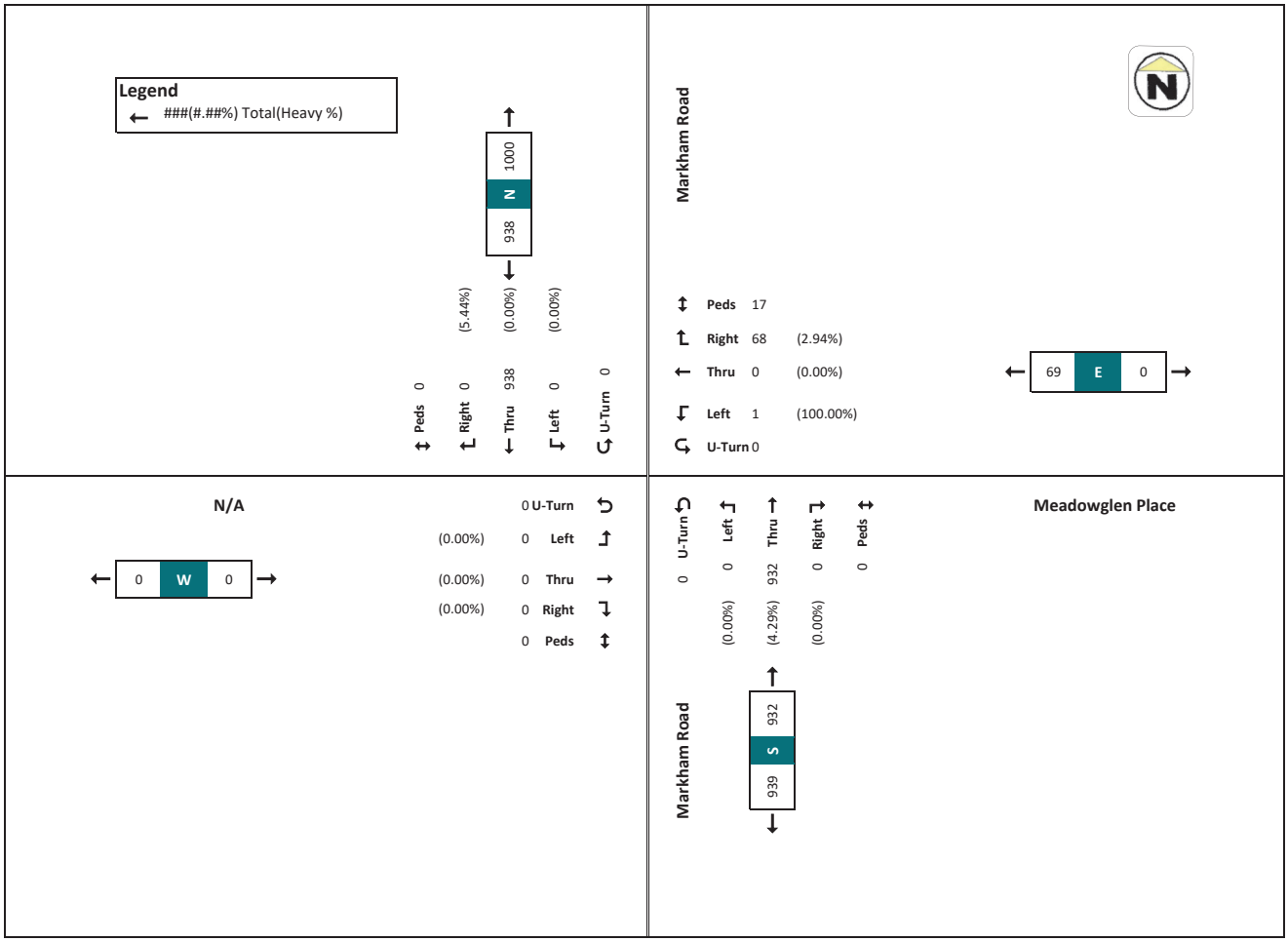


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Meadowglen Place
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24056

AM Peak Hour - Markham Road & Meadowglen Place

	Markham Road Southbound						Meadowglen Place Westbound						Markham Road Northbound						N/A Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:15	0	0	221	0	0	221	0	0	0	19	6	19	0	0	259	0	0	259	0	0	0	0	0	0	499
8:30	0	0	208	0	0	208	0	0	0	29	5	29	0	0	244	0	0	244	0	0	0	0	0	0	481
8:45	0	0	249	0	0	249	0	1	0	12	6	13	0	0	202	0	0	202	0	0	0	0	0	0	464
9:00	0	0	260	0	0	260	0	0	0	8	0	8	0	0	227	0	0	227	0	0	0	0	0	0	495
Hourly Total	0	0	938	0	0	938	0	1	0	68	17	69	0	0	932	0	0	932	0	0	0	0	0	0	1939
Approach %	0.0%	0.0%	100.0%	0.0%	-	-	0.0%	1.4%	0.0%	98.6%	-	-	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-	-	-	-	-
Total %	0.0%	0.0%	48.4%	0.0%	-	48.4%	0.0%	0.1%	0.0%	3.5%	-	3.6%	0.0%	0.0%	48.1%	0.0%	-	48.1%	0.0%	0.0%	0.0%	0.0%	-	0.0%	-
PHF	0	0	0.9	0	-	0.9	0	0.25	0	0.59	-	0.59	0	0	0.9	0	-	0.9	0	0	0	0	-	0	0.97
Lights	0	0	887	0	-	887	0	0	0	66	-	66	0	0	892	0	-	892	0	0	0	0	-	0	1845
% Lights	-	-	94.6%	-	-	94.6%	-	0.0%	-	97.1%	-	95.7%	-	-	95.7%	-	-	95.7%	-	-	-	-	-	-	95.2%
Buses	-	0	34	0	-	34	-	0	0	2	-	2	-	0	29	0	-	29	-	0	0	0	-	0	65
% Buses	-	-	3.6%	-	-	3.6%	-	0.0%	-	2.9%	-	2.9%	-	-	3.1%	-	-	3.1%	-	-	-	-	-	-	3.4%
Trucks	-	0	17	0	-	17	-	1	0	0	-	1	-	0	11	0	-	11	-	0	0	0	-	0	29
% Trucks	-	-	1.8%	-	-	1.8%	-	100.0%	-	0.0%	-	1.4%	-	-	1.2%	-	-	1.2%	-	-	-	-	-	-	1.5%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	25	-	-	-	-	-	0	-	-	-	-	-	0	-	25

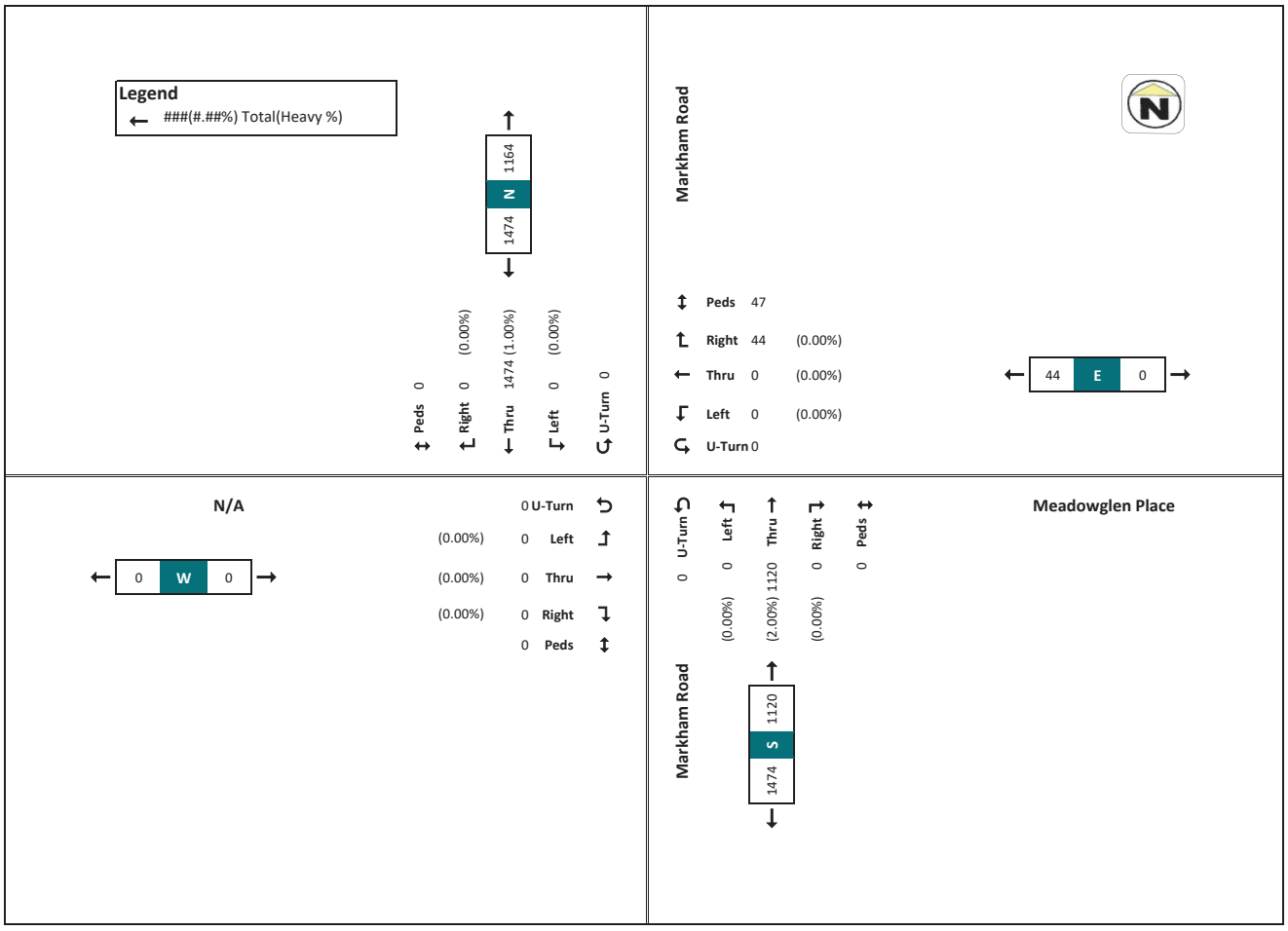


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Meadowglen Place
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24056

PM Peak Hour - Markham Road & Meadowglen Place

	Markham Road Southbound						Meadowglen Place Westbound						Markham Road Northbound						N/A Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:30	0	0	374	0	0	374	0	0	0	12	13	12	0	0	267	0	0	267	0	0	0	0	0	0	653
16:45	0	0	403	0	0	403	0	0	0	6	13	6	0	0	283	0	0	283	0	0	0	0	0	0	692
17:00	0	0	350	0	0	350	0	0	0	11	9	11	0	0	258	0	0	258	0	0	0	0	0	0	619
17:15	0	0	347	0	0	347	0	0	0	15	12	15	0	0	312	0	0	312	0	0	0	0	0	0	674
Hourly Total	0	0	1474	0	0	1474	0	0	0	44	47	44	0	0	1120	0	0	1120	0	0	0	0	0	0	2638
Approach %	0.0%	0.0%	100.0%	0.0%	-	-	0.0%	0.0%	0.0%	100.0%	-	-	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-	-	-	-	
Total %	0.0%	0.0%	55.9%	0.0%	-	55.9%	0.0%	0.0%	0.0%	1.7%	-	1.7%	0.0%	0.0%	42.5%	0.0%	-	42.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
PHF	0	0	0.91	0	-	0.91	0	0	0	0.73	-	0.73	0	0	0.9	0	-	0.9	0	0	0	0	0	0	0.95
Lights	0	0	1454	0	-	1454	0	0	0	44	-	44	0	0	1094	0	-	1094	0	0	0	0	-	0	2592
% Lights	-	-	98.6%	-	-	98.6%	-	-	-	100.0%	-	100.0%	-	-	97.7%	-	-	97.7%	-	-	-	-	-	-	98.3%
Buses	-	0	34	0	-	34	-	0	0	0	-	0	-	0	17	0	-	17	-	0	0	0	-	0	51
% Buses	-	-	2.3%	-	-	2.3%	-	-	0.0%	0.0%	-	0.0%	-	-	1.5%	-	-	1.5%	-	-	-	-	-	-	1.9%
Trucks	-	0	5	0	-	5	-	0	0	0	-	0	-	0	9	0	-	9	-	0	0	0	-	0	14
% Trucks	-	-	0.3%	-	-	0.3%	-	-	0.0%	0.0%	-	0.0%	-	-	0.8%	-	-	0.8%	-	-	-	-	-	-	0.5%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0

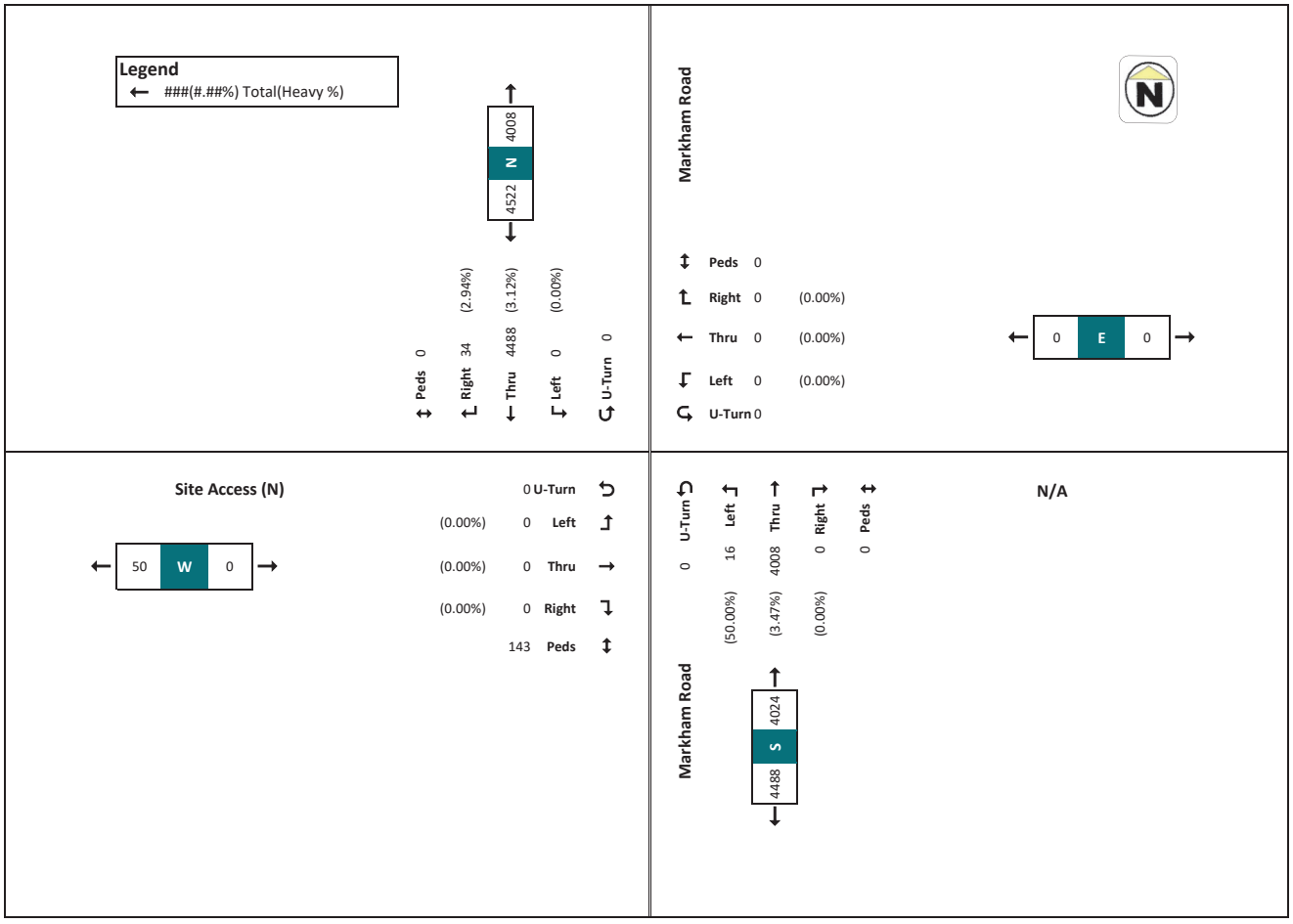


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access (N)
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24057

Turning Movement Count - Markham Road & Site Access (N)

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access (N) Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	0	169	1	0	170	0	0	0	0	0	0	0	0	202	0	0	202	0	0	0	0	4	0	372
7:45	0	0	204	0	0	204	0	0	0	0	0	0	0	2	213	0	0	215	0	0	0	0	11	0	419
Hourly Total	0	0	373	1	0	374	0	0	0	0	0	0	0	2	415	0	0	417	0	0	0	0	15	0	791
8:00	0	0	209	2	0	211	0	0	0	0	0	0	0	4	250	0	0	254	0	0	0	0	4	0	465
8:15	0	0	221	1	0	222	0	0	0	0	0	0	0	4	250	0	0	254	0	0	0	0	9	0	481
8:30	0	0	207	1	0	208	0	0	0	0	0	0	0	1	244	0	0	245	0	0	0	0	8	0	453
8:45	0	0	247	2	0	249	0	0	0	0	0	0	0	7	202	0	0	204	0	0	0	0	8	0	453
Hourly Total	0	0	884	6	0	890	0	0	0	0	0	0	0	7	955	0	0	962	0	0	0	0	29	0	1852
9:00	0	0	260	0	0	260	0	0	0	0	0	0	0	0	226	0	0	226	0	0	0	0	7	0	486
9:15	0	0	216	2	0	218	0	0	0	0	0	0	0	0	196	0	0	196	0	0	0	0	5	0	414
Hourly Total	0	0	476	2	0	478	0	0	0	0	0	0	0	0	422	0	0	422	0	0	0	0	12	0	900
* Break *																									
16:00	0	0	288	4	0	292	0	0	0	0	0	0	0	0	298	0	0	298	0	0	0	0	20	0	590
16:15	0	0	366	3	0	369	0	0	0	0	0	0	0	1	266	0	0	267	0	0	0	0	6	0	636
16:30	0	0	370	4	0	374	0	0	0	0	0	0	0	0	266	0	0	266	0	0	0	0	11	0	640
16:45	0	0	401	2	0	403	0	0	0	0	0	0	0	0	283	0	0	283	0	0	0	0	9	0	686
Hourly Total	0	0	1425	13	0	1438	0	0	0	0	0	0	0	1	1113	0	0	1114	0	0	0	0	46	0	2552
17:00	0	0	347	3	0	350	0	0	0	0	0	0	0	1	257	0	0	258	0	0	0	0	9	0	608
17:15	0	0	343	4	0	347	0	0	0	0	0	0	0	1	311	0	0	312	0	0	0	0	15	0	659
17:30	0	0	330	4	0	334	0	0	0	0	0	0	0	3	291	0	0	294	0	0	0	0	9	0	637
17:45	0	0	311	1	0	312	0	0	0	0	0	0	0	1	244	0	0	245	0	0	0	0	8	0	557
Hourly Total	0	0	1330	12	0	1342	0	0	0	0	0	0	0	6	1103	0	0	1109	0	0	0	0	41	0	2451
Grand Total	0	0	4488	34	0	4522	0	0	0	0	0	0	0	16	4008	0	0	4024	0	0	0	0	143	0	8546
Approach %	0.0%	0.0%	99.2%	0.8%			-	-	-	-	-	-	0.0%	0.4%	99.6%	0.0%			-	-	-	-	-	-	
Total %	0.0%	0.0%	52.5%	0.4%		52.9%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.2%	46.9%	0.0%		47.1%	0.0%	0.0%	0.0%	0.0%		0.0%	
Lights	0	0	4348	33		4381	0	0	0	0		0	0	8	3869	0		3877	0	0	0	0		0	8258
% Lights	-	-	96.9%	97.1%		96.9%	-	-	-	-		-		50.0%	96.5%	-		96.3%	-	-	-	-		-	96.6%
Buses	-	0	92	0		92	-	0	0	0		0	-	4	88	0		92	-	0	0	0		0	184
% Buses	-	-	2.0%	0.0%		2.0%	-	-	-	-		-	-	25.0%	2.2%	-		2.3%	-	-	-	-		-	2.2%
Trucks	-	0	48	1		49	-	0	0	0		0	-	4	51	0		55	-	0	0	0		0	104
% Trucks	-	-	1.1%	-		1.1%	-	-	-	-		-	-	25.0%	1.3%	-		1.4%	-	-	-	-		-	1.2%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0		-	-	-	-	0	-	-	-	-	-	0		-	-	-	-	143	-	143

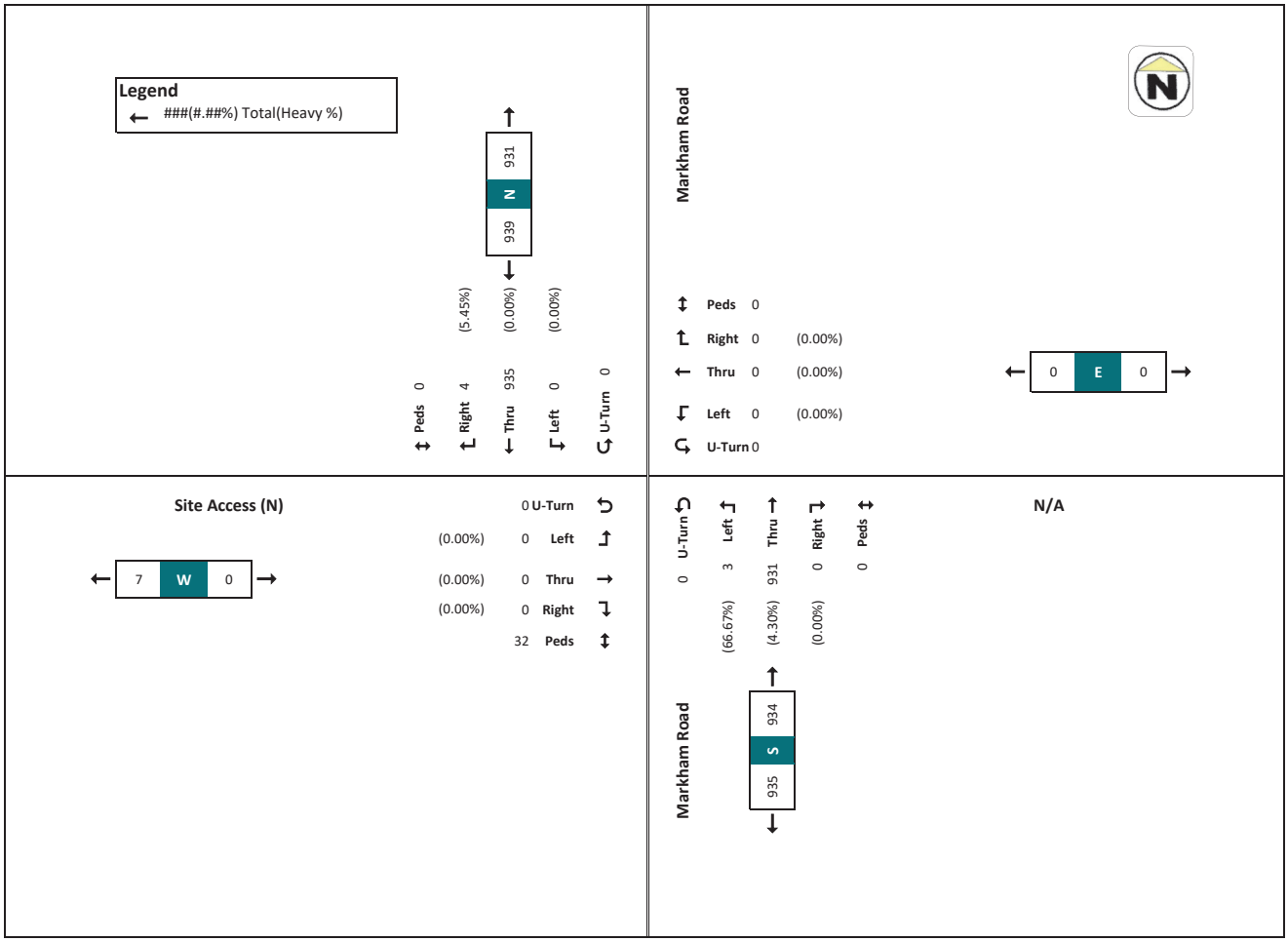


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access (N)
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24057

AM Peak Hour - Markham Road & Site Access (N)

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access (N) Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:15	0	0	221	1	0	222	0	0	0	0	0	0	0	0	259	0	0	259	0	0	0	0	9	0	481
8:30	0	0	207	1	0	208	0	0	0	0	0	0	0	1	244	0	0	245	0	0	0	0	8	0	453
8:45	0	0	247	2	0	249	0	0	0	0	0	0	0	2	202	0	0	204	0	0	0	0	8	0	453
9:00	0	0	260	0	0	260	0	0	0	0	0	0	0	0	226	0	0	226	0	0	0	0	7	0	486
Hourly Total	0	0	935	4	0	939	0	0	0	0	0	0	0	3	931	0	0	934	0	0	0	0	32	0	1873
Approach %	0.0%	0.0%	99.6%	0.4%	-	-	-	-	-	-	-	-	0.0%	0.3%	99.7%	0.0%	-	-	-	-	-	-	-	-	-
Total %	0.0%	0.0%	49.9%	0.2%	-	50.1%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.2%	49.7%	0.0%	-	49.9%	0.0%	0.0%	0.0%	0.0%	-	0.0%	-
PHF	0	0	0.9	0.5	-	0.9	0	0	0	0	-	0	0	0.38	0.9	0	-	0.9	0	0	0	0	-	0	0.96
Lights	0	0	884	3	-	887	0	0	0	0	-	0	0	1	891	0	-	892	0	0	0	0	-	0	1779
% Lights	-	-	94.5%	75.0%	-	94.5%	-	-	-	-	-	-	-	33.3%	95.7%	-	-	95.5%	-	-	-	-	-	-	95.0%
Buses	-	0	34	0	-	34	-	0	0	0	-	0	-	1	29	0	-	30	-	0	0	0	-	0	64
% Buses	-	-	3.6%	0.0%	-	3.6%	-	-	-	-	-	-	-	33.3%	3.1%	-	-	3.2%	-	-	-	-	-	-	3.4%
Trucks	0	-	17	1	-	18	0	0	0	0	-	0	-	1	11	0	-	12	-	0	0	0	-	0	30
% Trucks	-	-	1.8%	25.0%	-	1.9%	-	-	-	-	-	-	-	33.3%	1.2%	-	-	1.3%	-	-	-	-	-	-	1.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	32	-	32

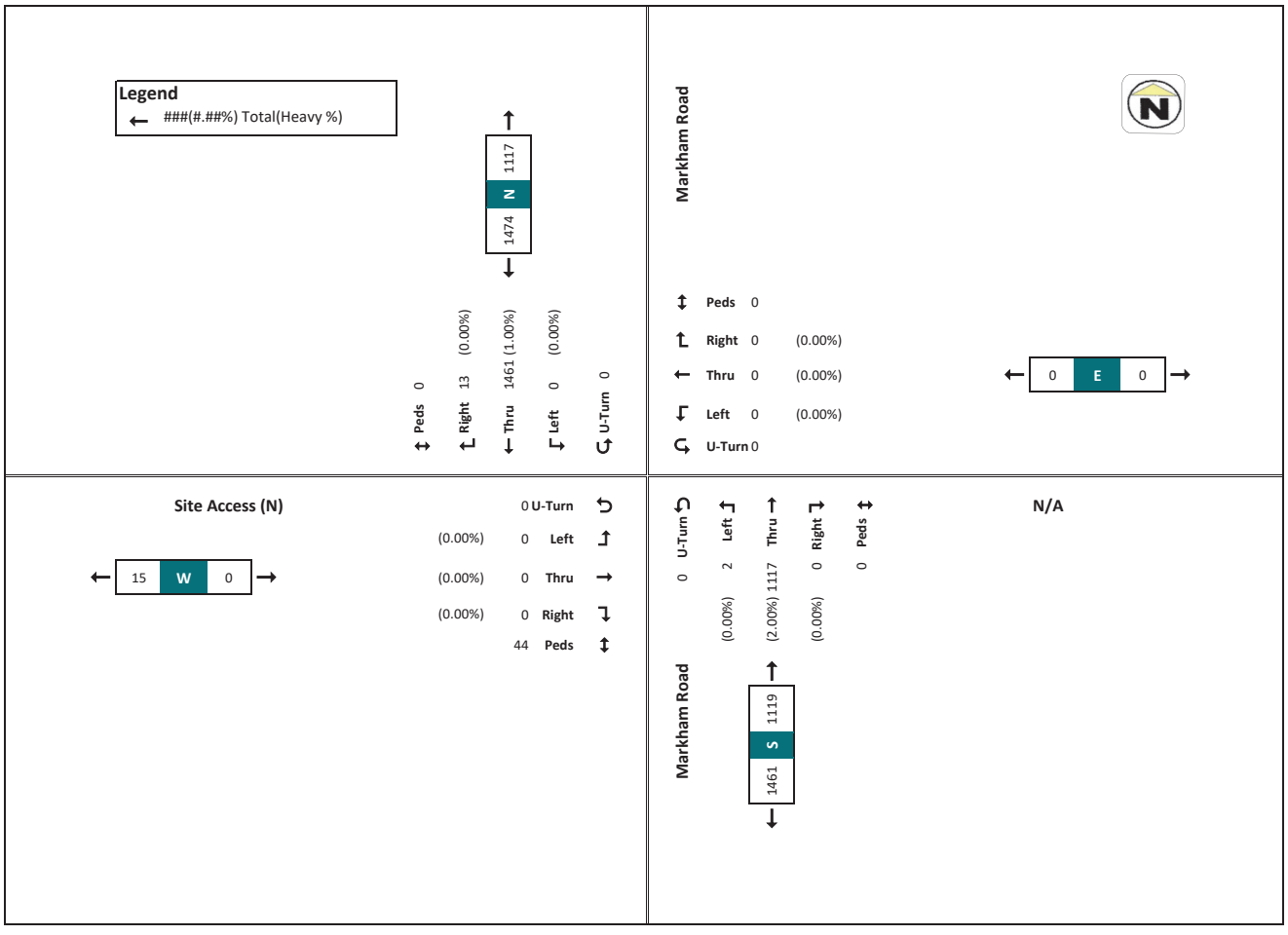


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access (N)
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24057

PM Peak Hour - Markham Road & Site Access (N)

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access (N) Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:30	0	0	370	4	0	374	0	0	0	0	0	0	0	0	266	0	0	266	0	0	0	0	11	0	640
16:45	0	0	401	2	0	403	0	0	0	0	0	0	0	0	283	0	0	283	0	0	0	0	9	0	686
17:00	0	0	347	3	0	350	0	0	0	0	0	0	0	1	257	0	0	258	0	0	0	0	9	0	608
17:15	0	0	343	4	0	347	0	0	0	0	0	0	0	1	311	0	0	312	0	0	0	0	15	0	659
Hourly Total	0	0	1461	13	0	1474	0	0	0	0	0	0	0	2	1117	0	0	1119	0	0	0	0	44	0	2593
Approach %	0.0%	0.0%	99.1%	0.9%	-	-	-	-	-	-	-	-	0.0%	0.2%	99.8%	0.0%	-	-	-	-	-	-	-	-	
Total %	0.0%	0.0%	56.3%	0.5%	-	56.8%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.1%	59.6%	0.0%	-	43.2%	0.0%	0.0%	0.0%	0.0%	-	0.0%	
PHF	0	0	0.91	0.81	-	0.91	0	0	0	0	-	0	0	0.5	0.9	0	-	0.9	0	0	0	0	-	0	0.94
Lights	0	0	1441	13	-	1454	0	0	0	0	-	0	0	2	1091	0	-	1093	0	0	0	0	-	0	2547
% Lights	-	-	98.6%	100.0%	-	98.6%	-	-	-	-	-	-	-	100.0%	97.7%	-	-	97.7%	-	-	-	-	-	-	98.2%
Buses	-	0	34	0	-	34	-	0	0	0	-	0	-	0	17	0	-	17	-	0	0	0	-	0	51
% Buses	-	-	2.3%	0.0%	-	2.3%	-	-	-	-	-	-	-	0.0%	1.5%	-	-	1.5%	-	-	-	-	-	-	2.0%
Trucks	-	0	5	0	-	5	-	0	0	0	-	0	-	0	9	0	-	9	-	0	0	0	-	0	14
% Trucks	-	-	0.3%	0.0%	-	0.3%	-	-	-	-	-	-	-	0.0%	0.8%	-	-	0.8%	-	-	-	-	-	-	0.5%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0

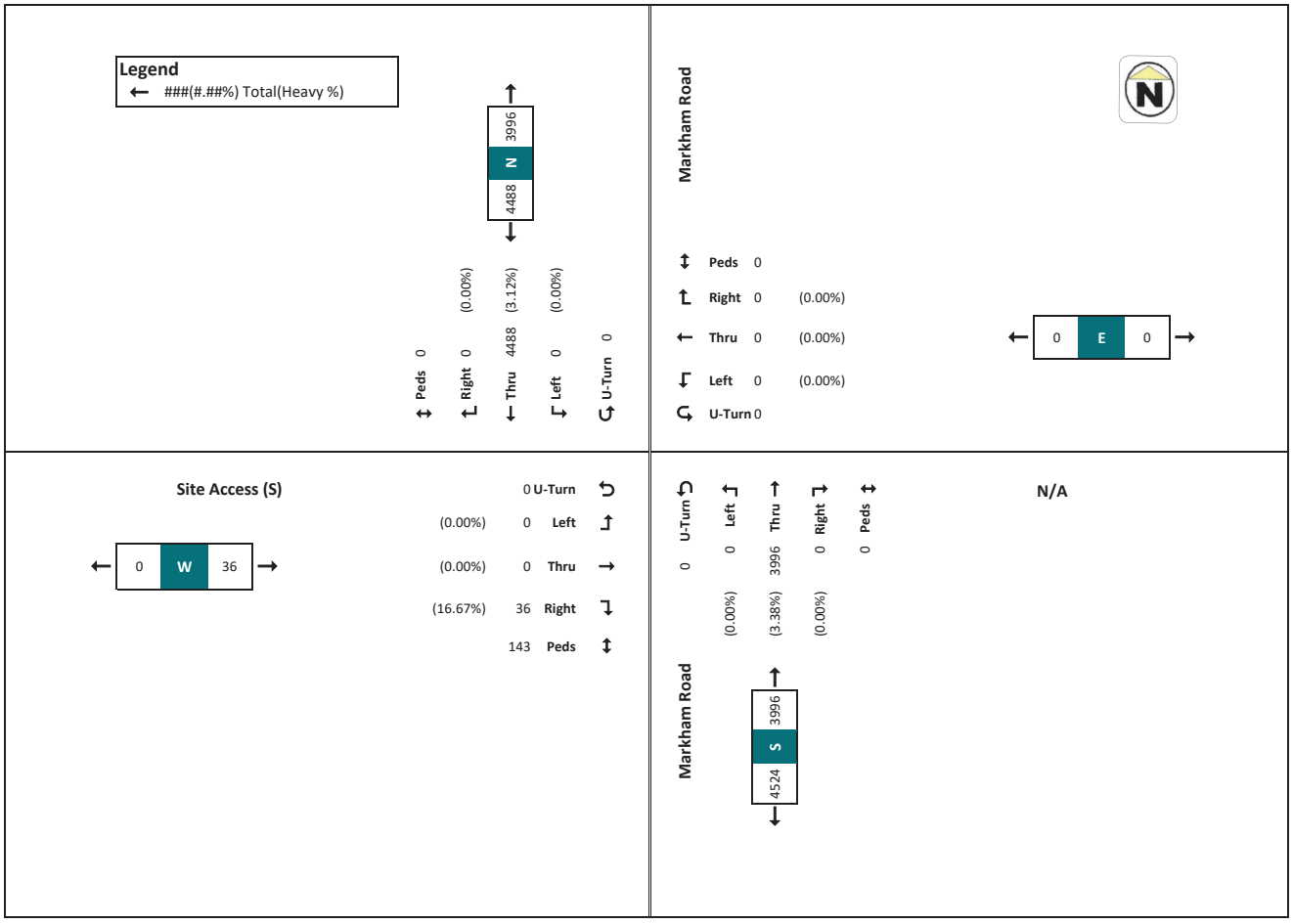


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access (S)
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24059

Turning Movement Count - Markham Road & Site Access (S)

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access (S) Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	0	169	0	0	169	0	0	0	0	0	0	0	0	202	0	0	202	0	1	0	1	4	2	373
7:45	0	0	204	0	0	204	0	0	0	0	0	0	0	0	212	0	0	212	0	0	0	0	11	0	416
Hourly Total	0	0	373	0	0	373	0	0	0	0	0	0	0	0	414	0	0	414	0	1	0	1	15	2	789
8:00	0	0	209	0	0	209	0	0	0	0	0	0	0	0	248	0	0	248	0	0	0	4	4	4	461
8:15	0	0	221	0	0	221	0	0	0	0	0	0	0	0	259	0	0	259	0	1	0	1	9	2	492
8:30	0	0	207	0	0	207	0	0	0	0	0	0	0	0	245	0	0	245	0	0	0	1	8	1	451
8:45	0	0	247	0	0	247	0	0	0	0	0	0	0	0	201	0	0	201	0	0	0	2	8	2	450
Hourly Total	0	0	884	0	0	884	0	0	0	0	0	0	0	0	953	0	0	951	0	1	0	8	29	9	1844
9:00	0	0	260	0	0	260	0	0	0	0	0	0	0	0	226	0	0	226	0	1	0	0	7	1	487
9:15	0	0	216	0	0	216	0	0	0	0	0	0	0	0	196	0	0	196	0	0	0	0	5	0	412
Hourly Total	0	0	476	0	0	476	0	0	0	0	0	0	0	0	422	0	0	422	0	1	0	0	12	1	899
* Break *																									
16:00	0	0	288	0	0	288	0	0	0	0	0	0	0	0	298	0	0	298	0	1	0	1	20	2	588
16:15	0	0	366	0	0	366	0	0	0	0	0	0	0	0	265	0	0	265	0	1	0	4	6	5	636
16:30	0	0	370	0	0	370	0	0	0	0	0	0	0	0	266	0	0	266	0	1	0	7	11	8	644
16:45	0	0	401	0	0	401	0	0	0	0	0	0	0	0	283	0	0	283	0	0	0	4	9	4	688
Hourly Total	0	0	1425	0	0	1425	0	0	0	0	0	0	0	0	1112	0	0	1112	0	3	0	16	46	19	2556
17:00	0	0	347	0	0	347	0	0	0	0	0	0	0	0	256	0	0	256	0	1	0	2	9	3	606
17:15	0	0	343	0	0	343	0	0	0	0	0	0	0	0	310	0	0	310	0	1	0	4	15	5	658
17:30	0	0	320	0	0	320	0	0	0	0	0	0	0	0	288	0	0	288	0	1	0	3	9	4	621
17:45	0	0	311	0	0	311	0	0	0	0	0	0	0	0	243	0	0	243	0	2	0	2	8	4	568
Hourly Total	0	0	1330	0	0	1330	0	0	0	0	0	0	0	0	1097	0	0	1097	0	5	0	11	41	16	2443
Grand Total	0	0	4488	0	0	4488	0	0	0	0	0	0	0	0	3996	0	0	3996	0	11	0	36	143	47	8531
Approach %	0.0%	0.0%	100.0%	0.0%			-	-	-	-	-	-	0.0%	0.0%	100.0%	0.0%			0.0%	23.4%	0.0%	76.6%			
Total %	0.0%	0.0%	52.6%	0.0%		52.6%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	46.8%	0.0%		46.8%	0.0%	0.1%	0.0%	0.4%		0.6%	
Lights	0	0	4348	0		4348	0	0	0	0		0	0	0	3861	0		3861	0	10	0	30		40	8249
% Lights	-	-	96.9%	-		96.9%	-	-	-	-		-	-	-	96.6%	-		96.6%	-	90.9%	-	83.3%		85.1%	96.7%
Buses	-	0	92	0		92	-	0	0	0		0	-	0	84	0		84	-	1	0	3		4	180
% Buses	-	-	2.0%	-		2.0%	-	-	-	-		-	-	-	2.1%	-		2.1%	-	9.1%	-	8.3%		8.5%	2.1%
Trucks	-	0	48	0		48	-	0	0	0		0	-	0	51	0		51	-	0	0	3		3	102
% Trucks	-	-	1.1%	-		1.1%	-	-	-	-		-	-	-	1.3%	-		1.3%	-	0.0%	-	8.3%		6.4%	1.2%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	143	-	143

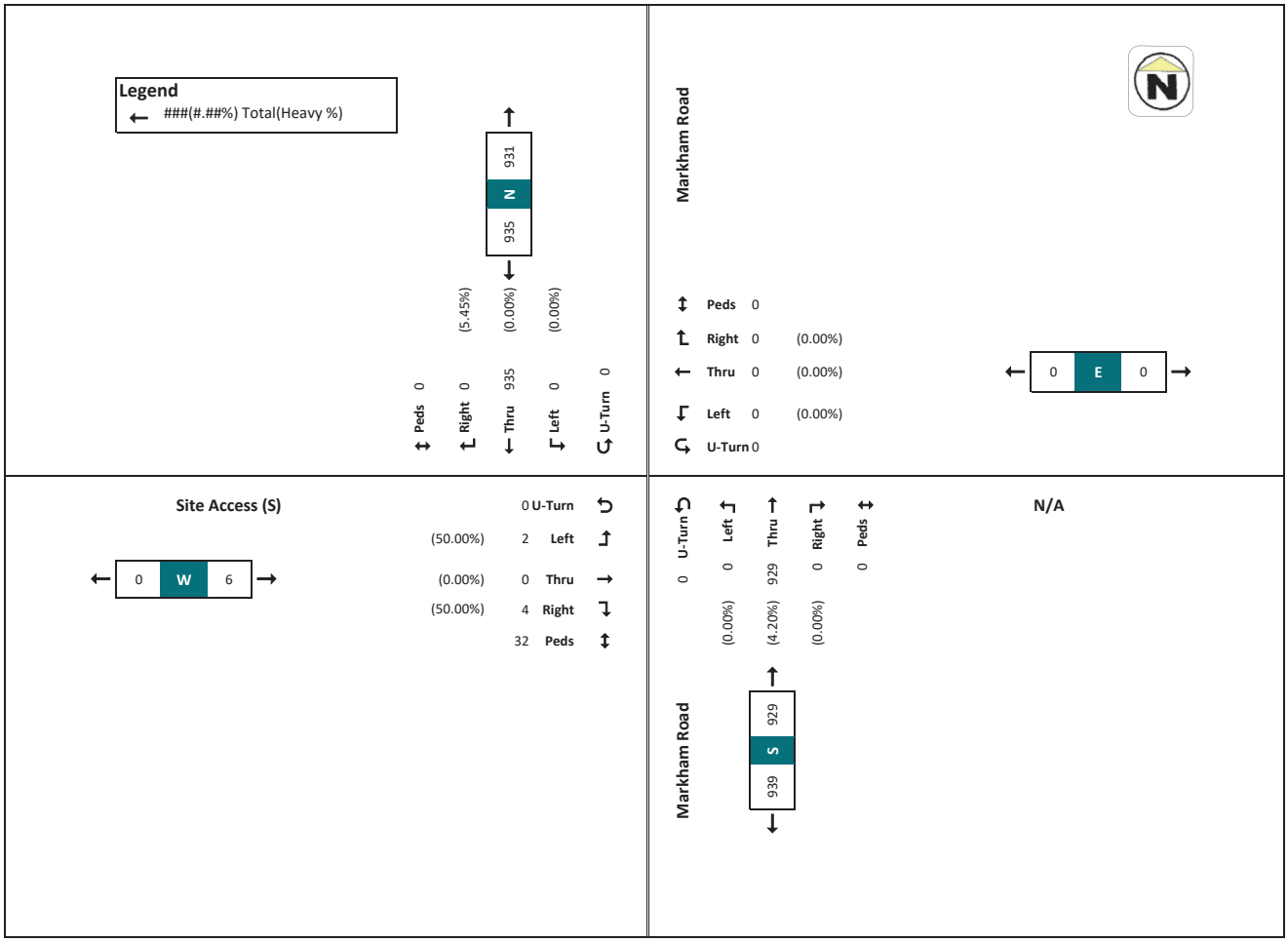


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access (S)
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24059

AM Peak Hour - Markham Road & Site Access (S)

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access (S) Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:15	0	0	221	0	0	221	0	0	0	0	0	0	0	0	259	0	0	259	0	1	0	1	9	2	482
8:30	0	0	207	0	0	207	0	0	0	0	0	0	0	0	243	0	0	243	0	0	0	1	8	1	451
8:45	0	0	247	0	0	247	0	0	0	0	0	0	0	0	201	0	0	201	0	0	0	2	8	2	450
9:00	0	0	260	0	0	260	0	0	0	0	0	0	0	0	226	0	0	226	0	1	0	0	7	1	487
Hourly Total	0	0	935	0	0	935	0	0	0	0	0	0	0	0	929	0	0	929	0	2	0	4	32	6	1870
Approach %	0.0%	0.0%	100.0%	0.0%	-	-	-	-	-	-	-	-	0.0%	0.0%	100.0%	0.0%	-	-	0.0%	33.3%	0.0%	66.7%	-	-	-
Total %	0.0%	0.0%	50.0%	0.0%	-	50.0%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.0%	49.7%	0.0%	-	49.7%	0.0%	0.1%	0.0%	0.2%	-	0.3%	-
PHF	0	0	0.9	0	-	0.9	0	0	0	0	-	0	0	0	0.9	0	-	0.9	0	0.5	0	0.5	-	0.75	0.96
Lights	0	0	884	0	-	884	0	0	0	0	-	0	0	0	890	0	-	890	0	1	0	2	-	3	1777
% Lights	-	-	94.5%	-	-	94.5%	-	-	-	-	-	-	-	-	95.8%	-	-	95.8%	-	50.0%	-	50.0%	-	50.0%	95.0%
Buses	-	0	34	0	-	34	-	0	0	0	-	0	-	0	28	0	-	28	-	1	0	1	-	2	64
% Buses	-	-	3.6%	-	-	3.6%	-	-	-	-	-	-	-	-	3.0%	-	-	3.0%	-	50.0%	-	25.0%	-	33.3%	3.4%
Trucks	-	0	17	0	-	17	-	0	0	0	-	0	-	0	11	0	-	11	-	0	0	1	-	1	29
% Trucks	-	-	1.8%	-	-	1.8%	-	-	-	-	-	-	-	-	1.2%	-	-	1.2%	-	0.0%	-	25.0%	-	16.7%	1.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	32	-	32

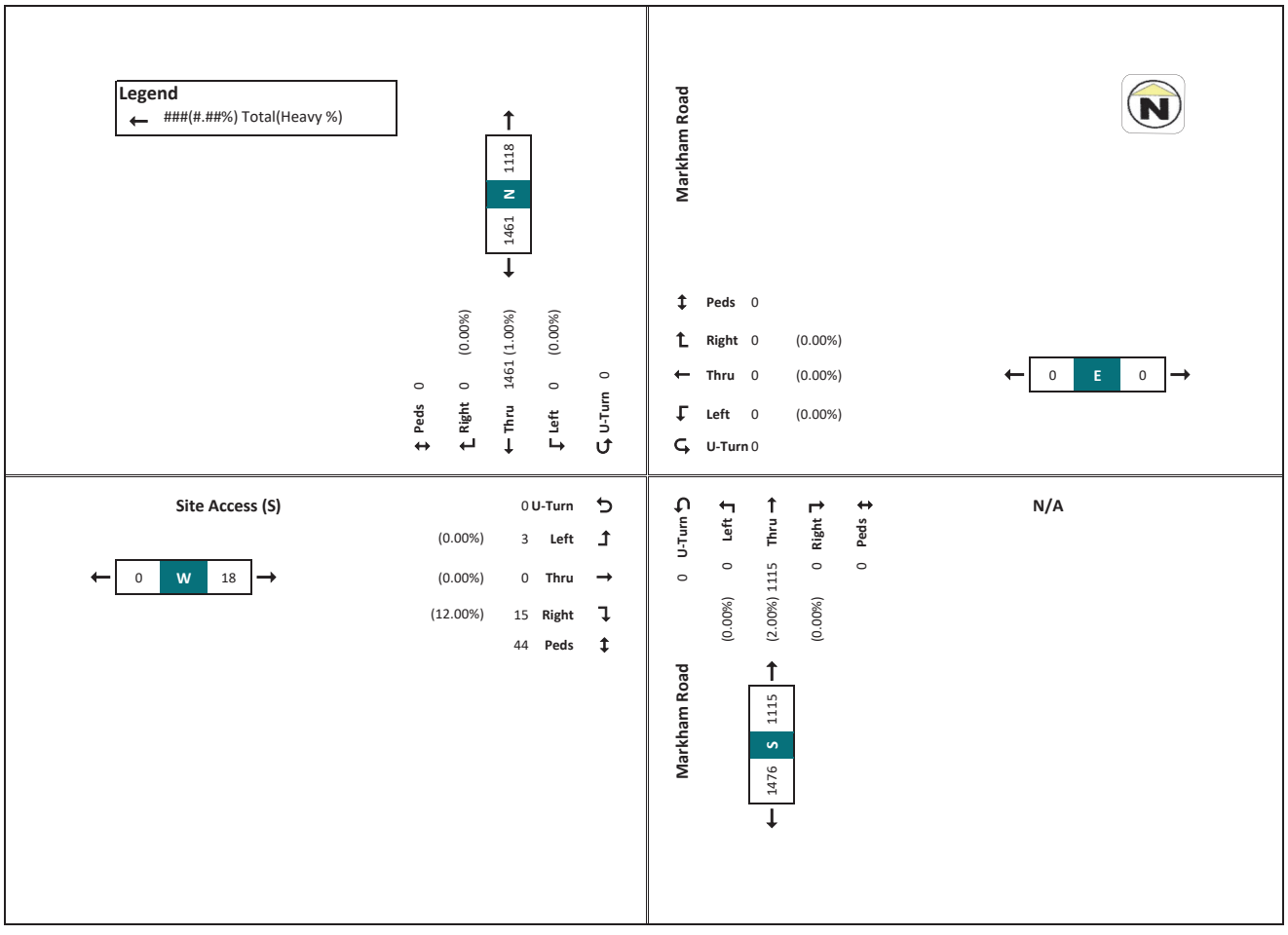


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access (S)
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24059

PM Peak Hour - Markham Road & Site Access (S)

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access (S) Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:30	0	0	370	0	0	370	0	0	0	0	0	0	0	0	266	0	0	266	0	1	0	7	11	8	644
16:45	0	0	401	0	0	401	0	0	0	0	0	0	0	0	283	0	0	283	0	0	0	4	9	4	688
17:00	0	0	347	0	0	347	0	0	0	0	0	0	0	0	256	0	0	256	0	1	0	2	9	3	606
17:15	0	0	343	0	0	343	0	0	0	0	0	0	0	0	310	0	0	310	0	1	0	4	15	5	658
Hourly Total	0	0	1461	0	0	1461	0	0	0	0	0	0	0	0	1115	0	0	1115	0	3	0	17	44	20	2596
Approach %	0.0%	0.0%	100.0%	0.0%	-		-	-	-	-	-		0.0%	0.0%	100.0%	0.0%	-		0.0%	15.0%	0.0%	85.0%	-		
Total %	0.0%	0.0%	56.3%	0.0%	-	56.3%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.0%	59.6%	0.0%	-	43.0%	0.0%	0.2%	0.0%	0.9%	-	0.8%	
PHF	0	0	0.91	0	-	0.91	0	0	0	0	-	0	0	0	0.9	0	-	0.9	0	0.75	0	0.63	-	0.63	0.94
Lights	0	0	1441	0	-	1441	0	0	0	0	-	0	0	0	1089	0	-	1089	0	3	0	15	-	18	2548
% Lights	-	-	98.6%	-	-	98.6%	-	-	-	-	-	0	-	-	97.7%	-	-	97.7%	-	100.0%	-	88.2%	-	90.0%	98.2%
Buses	-	0	34	0	-	34	-	0	0	0	-	0	-	0	17	0	-	17	-	0	0	0	-	0	51
% Buses	-	-	2.3%	-	-	2.3%	-	-	-	-	-	-	-	-	1.5%	-	-	1.5%	-	0.0%	-	0.0%	-	0.0%	2.0%
Trucks	-	0	5	0	-	5	-	0	0	0	-	0	-	0	9	0	-	9	-	0	0	2	-	2	16
% Trucks	-	-	0.3%	-	-	0.3%	-	-	-	-	-	-	-	-	0.8%	-	-	0.8%	-	0.0%	-	11.8%	-	10.0%	0.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0

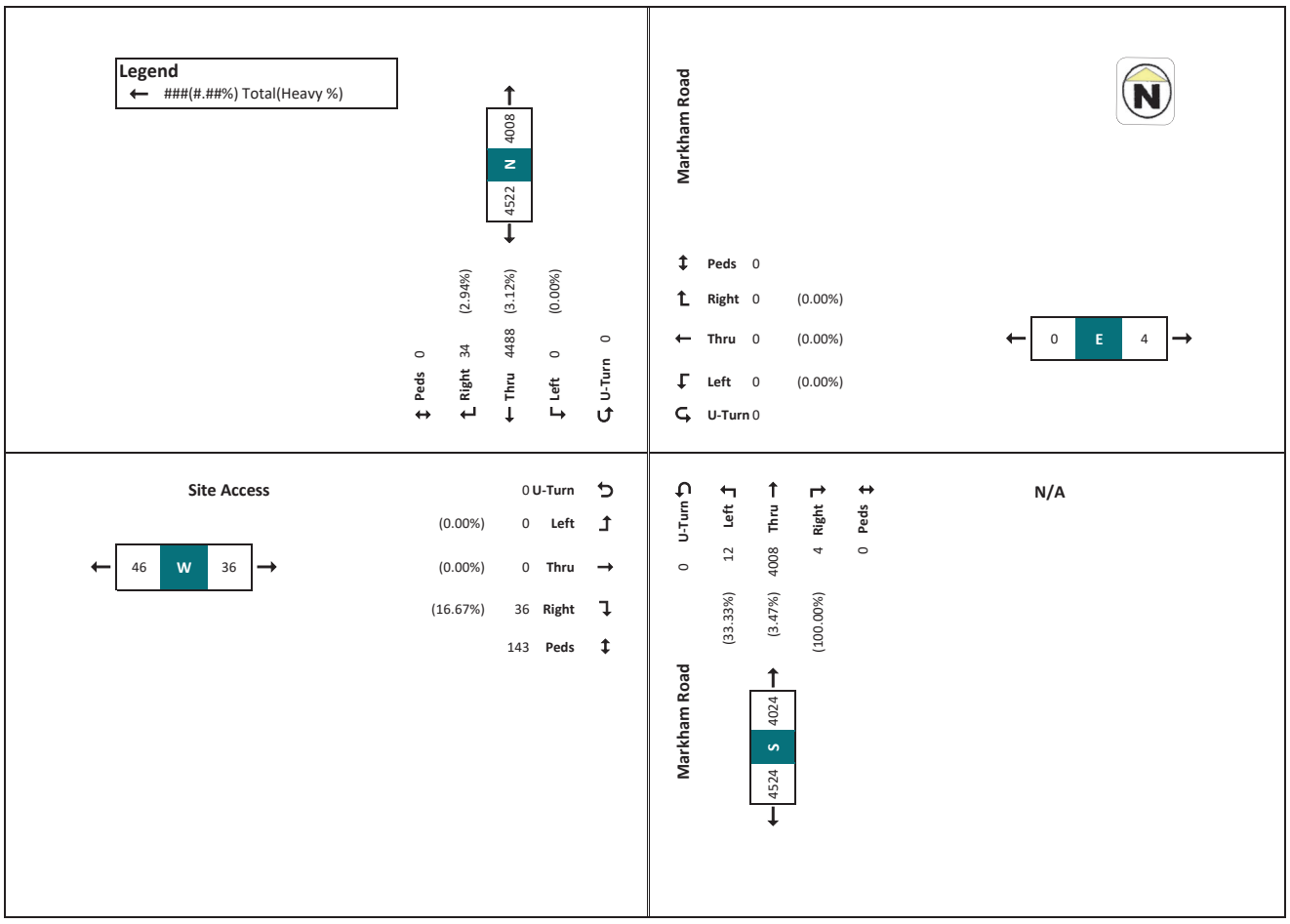


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24057

Turning Movement Count - Markham Road & Site Access

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	0	169	1	0	170	0	0	0	0	0	0	0	0	202	0	0	202	0	1	0	1	4	2	374
7:45	0	0	204	0	0	204	0	0	0	0	0	0	0	1	213	1	0	215	0	0	0	0	11	0	419
Hourly Total	0	0	373	1	0	374	0	0	0	0	0	0	0	1	415	1	0	417	0	1	0	1	15	2	793
8:00	0	0	209	2	0	211	0	0	0	0	0	0	0	0	250	2	0	254	0	0	0	4	4	4	469
8:15	0	0	221	1	0	222	0	0	0	0	0	0	0	0	259	0	0	259	0	1	0	1	9	2	493
8:30	0	0	207	1	0	208	0	0	0	0	0	0	0	3	244	0	0	245	0	0	0	1	8	1	454
8:45	0	0	247	2	0	249	0	0	0	0	0	0	0	1	202	1	0	204	0	0	0	2	8	2	455
Hourly Total	0	0	884	6	0	890	0	0	0	0	0	0	0	4	955	3	0	962	0	1	0	8	29	9	1861
9:00	0	0	260	0	0	260	0	0	0	0	0	0	0	0	226	0	0	226	0	1	0	0	7	1	487
9:15	0	0	216	2	0	218	0	0	0	0	0	0	0	0	196	0	0	196	0	0	0	0	5	0	414
Hourly Total	0	0	476	2	0	478	0	0	0	0	0	0	0	0	422	0	0	422	0	1	0	0	12	1	901
* Break *																									
16:00	0	0	288	4	0	292	0	0	0	0	0	0	0	0	298	0	0	298	0	1	0	1	20	2	592
16:15	0	0	366	3	0	369	0	0	0	0	0	0	0	1	266	0	0	267	0	1	0	4	6	5	641
16:30	0	0	370	4	0	374	0	0	0	0	0	0	0	0	266	0	0	266	0	1	0	7	11	8	648
16:45	0	0	401	2	0	403	0	0	0	0	0	0	0	0	283	0	0	283	0	0	0	4	9	4	690
Hourly Total	0	0	1425	13	0	1438	0	0	0	0	0	0	0	1	1113	0	0	1114	0	3	0	16	46	19	2571
17:00	0	0	347	3	0	350	0	0	0	0	0	0	0	1	257	0	0	258	0	1	0	2	9	3	611
17:15	0	0	343	4	0	347	0	0	0	0	0	0	0	1	311	0	0	312	0	1	0	4	15	3	664
17:30	0	0	320	4	0	324	0	0	0	0	0	0	0	0	293	1	0	294	0	1	0	3	9	4	631
17:45	0	0	311	1	0	312	0	0	0	0	0	0	0	4	240	1	0	245	0	2	0	2	8	4	561
Hourly Total	0	0	1321	12	0	1333	0	0	0	0	0	0	0	6	1101	2	0	1109	0	5	0	11	41	14	2467
Grand Total	0	0	4488	34	0	4522	0	0	0	0	0	0	0	12	4008	4	0	4024	0	11	0	36	143	47	8593
Approach %	0.0%	0.0%	99.2%	0.8%			-	-	-	-	-	-	0.0%	0.3%	99.6%	0.1%			0.0%	23.4%	0.0%	76.6%			
Total %	0.0%	0.0%	52.2%	0.4%		52.6%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.1%	46.6%	0.0%		46.8%	0.0%	0.1%	0.0%	0.4%		0.5%	
Lights	0	0	4348	33		4381	0	0	0	0		0	0	8	3869	0		3877	0	10	0	30		40	8298
% Lights	-	-	96.9%	97.1%		96.9%	-	-	-	-		-	-	66.7%	96.5%	0.0%		96.3%	-	90.9%	-	83.3%		85.1%	96.6%
Buses	-	0	92	0		92	-	0	0	0		0	-	4	88	0		92	-	1	0	3		4	188
% Buses	-	-	2.0%	0.0%		2.0%	-	-	-	-		-	-	33.3%	2.2%	0.0%		2.3%	-	9.1%	-	8.3%		8.5%	2.2%
Trucks	-	0	48	1		49	-	0	0	0		0	-	0	51	4		55	-	0	0	3		3	107
% Trucks	-	-	1.1%	-		1.1%	-	-	-	-		-	-	0.0%	1.3%	100.0%		1.4%	-	0.0%	-	8.3%		6.4%	1.2%
Bicycles					0	0					0	0					0	0					0	0	0
Pedestrians					0						0						0						143		143

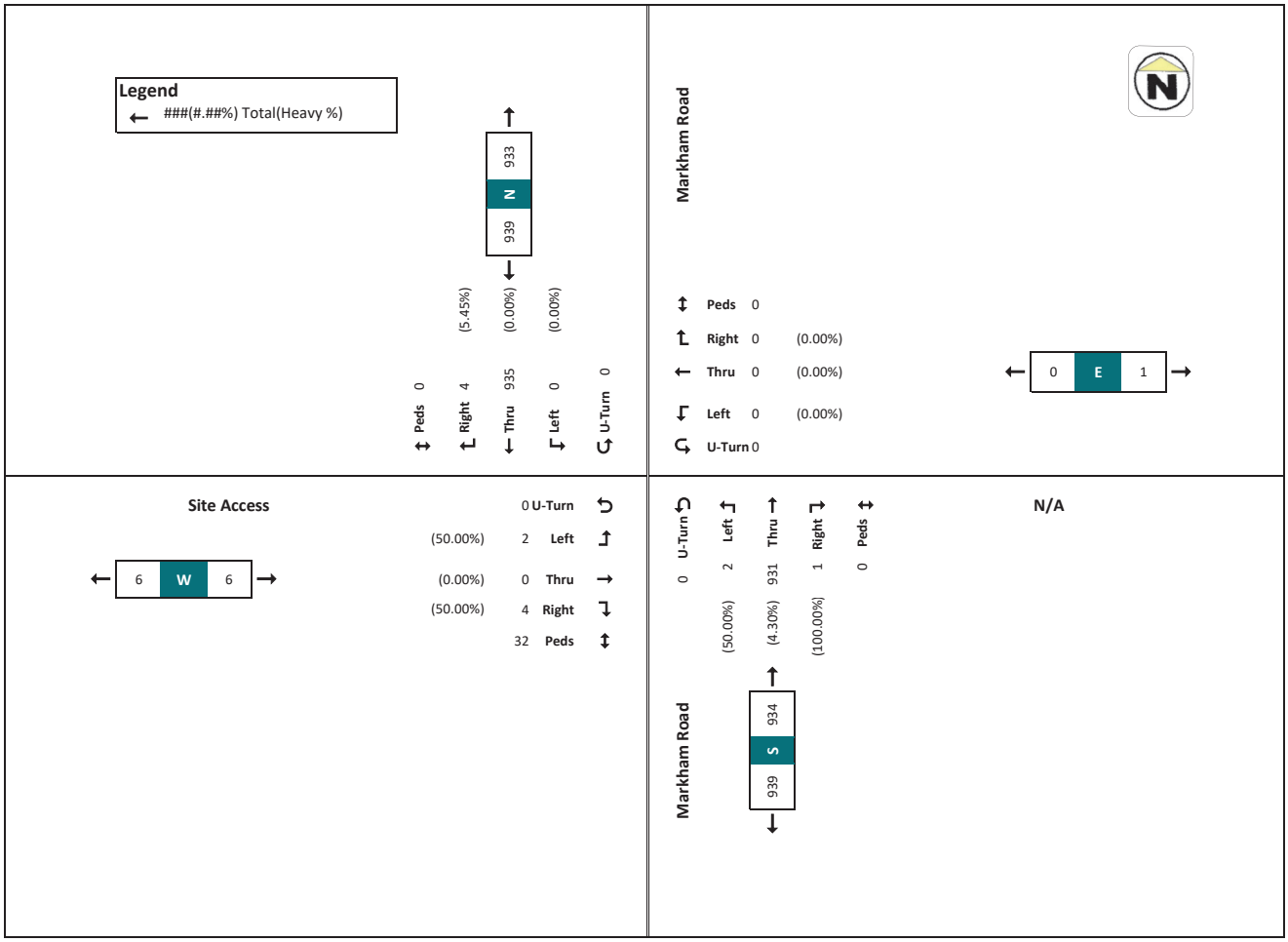


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24057

AM Peak Hour - Markham Road & Site Access

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
8:15	0	0	221	1	0	227	0	0	0	0	0	0	0	0	259	0	0	259	0	1	0	1	9	2	483
8:30	0	0	207	1	0	208	0	0	0	0	0	0	0	1	244	0	0	245	0	0	0	1	8	1	454
8:45	0	0	247	2	0	249	0	0	0	0	0	0	0	1	202	1	0	204	0	0	0	2	8	2	455
9:00	0	0	260	0	0	260	0	0	0	0	0	0	0	0	226	0	0	226	0	1	0	0	7	1	487
Hourly Total	0	0	935	4	0	939	0	0	0	0	0	0	0	2	931	1	0	934	0	2	0	4	32	6	1879
Approach %	0.0%	0.0%	99.6%	0.4%	-	-	-	-	-	-	-	-	0.0%	0.2%	99.7%	0.1%	-	-	0.0%	33.3%	0.0%	66.7%	-	-	-
Total %	0.0%	0.0%	49.8%	0.2%	-	50.0%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.1%	49.5%	0.1%	-	49.7%	0.0%	0.1%	0.0%	0.2%	-	0.3%	-
PHF	0	0	0.9	0.5	-	0.9	0	0	0	0	-	0	0	0.5	0.9	0.25	-	0.9	0	0.5	0	0.5	-	0.75	0.96
Lights	0	0	884	3	-	887	0	0	0	0	-	0	0	1	891	0	-	892	0	1	0	2	-	3	1782
% Lights	-	-	94.5%	75.0%	-	94.5%	-	-	-	-	-	-	-	50.0%	95.7%	0.0%	-	95.5%	-	50.0%	-	50.0%	-	50.0%	94.8%
Buses	-	0	34	0	-	34	-	0	0	0	-	0	-	1	29	0	-	30	-	1	0	1	-	2	66
% Buses	-	-	3.6%	0.0%	-	3.6%	-	-	-	-	-	-	-	50.0%	3.1%	0.0%	-	3.2%	-	50.0%	-	25.0%	-	33.3%	3.5%
Trucks	-	0	17	1	-	18	-	0	0	0	-	0	-	0	11	1	-	12	-	0	0	1	-	1	31
% Trucks	-	-	1.8%	25.0%	-	1.9%	-	-	-	-	-	-	-	0.0%	1.2%	100.0%	-	1.3%	-	0.0%	-	25.0%	-	16.7%	1.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	32	-	32

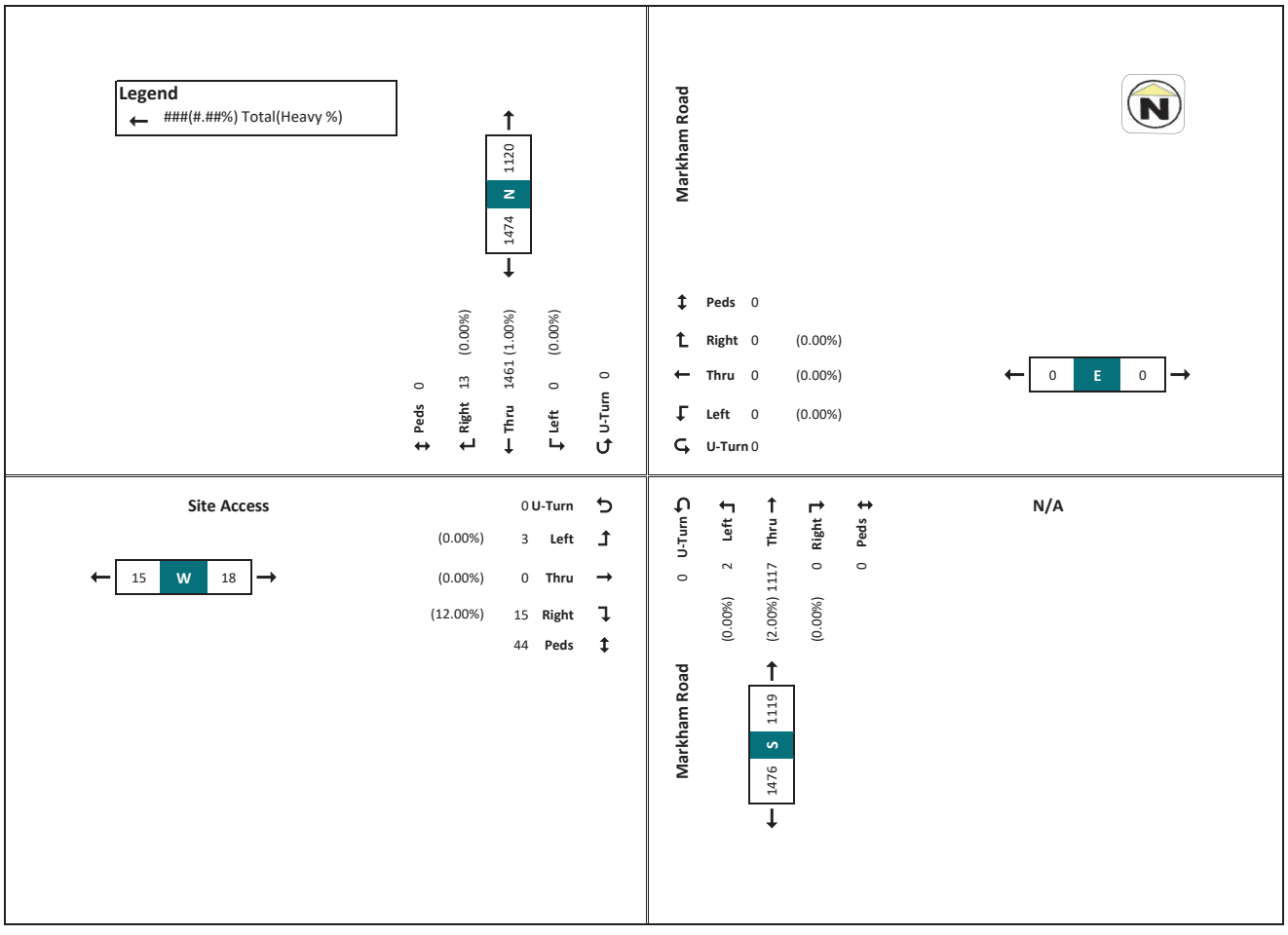


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Markham Road & Site Access
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24057

PM Peak Hour - Markham Road & Site Access

	Markham Road Southbound						N/A Westbound						Markham Road Northbound						Site Access Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:30	0	0	370	4	0	374	0	0	0	0	0	0	0	0	266	0	0	266	0	1	0	7	11	8	648
16:45	0	0	401	2	0	403	0	0	0	0	0	0	0	0	283	0	0	283	0	0	0	4	9	4	690
17:00	0	0	347	3	0	350	0	0	0	0	0	0	0	1	257	0	0	258	0	1	0	2	9	3	611
17:15	0	0	343	4	0	347	0	0	0	0	0	0	0	1	311	0	0	312	0	1	0	4	15	5	664
Hourly Total	0	0	1461	13	0	1474	0	0	0	0	0	0	0	2	1117	0	0	1119	0	3	0	17	44	20	2613
Approach %	0.0%	0.0%	99.1%	0.9%	-	-	-	-	-	-	-	-	0.0%	0.2%	99.8%	0.0%	-	-	0.0%	15.0%	0.0%	85.0%	-	-	
Total %	0.0%	0.0%	55.9%	0.5%	-	56.4%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	0.1%	59.4%	0.0%	-	42.8%	0.0%	0.2%	0.0%	0.9%	-	0.8%	
PHF	0	0	0.91	0.81	-	0.91	0	0	0	0	-	0	0	0.5	0.9	0	-	0.9	0	0.75	0	0.61	-	0.63	0.95
Lights	0	0	1441	13	-	1454	0	0	0	0	-	0	0	2	1091	0	-	1093	0	3	0	15	-	18	2565
% Lights	-	-	98.6%	100.0%	-	98.6%	-	-	-	-	-	-	-	100.0%	97.7%	-	-	97.7%	-	100.0%	-	88.2%	-	90.0%	98.2%
Buses	-	0	34	0	-	34	-	0	0	0	-	0	-	0	17	0	-	17	-	0	0	0	-	0	51
% Buses	-	-	2.3%	0.0%	-	2.3%	-	-	-	-	-	-	-	0.0%	1.5%	-	-	1.5%	-	0.0%	-	0.0%	-	0.0%	2.0%
Trucks	-	0	5	0	-	5	-	0	0	0	-	0	-	0	9	0	-	9	-	0	0	2	-	2	16
% Trucks	-	-	0.3%	0.0%	-	0.3%	-	-	-	-	-	-	-	0.0%	0.8%	-	-	0.8%	-	0.0%	-	11.8%	-	10.0%	0.6%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0

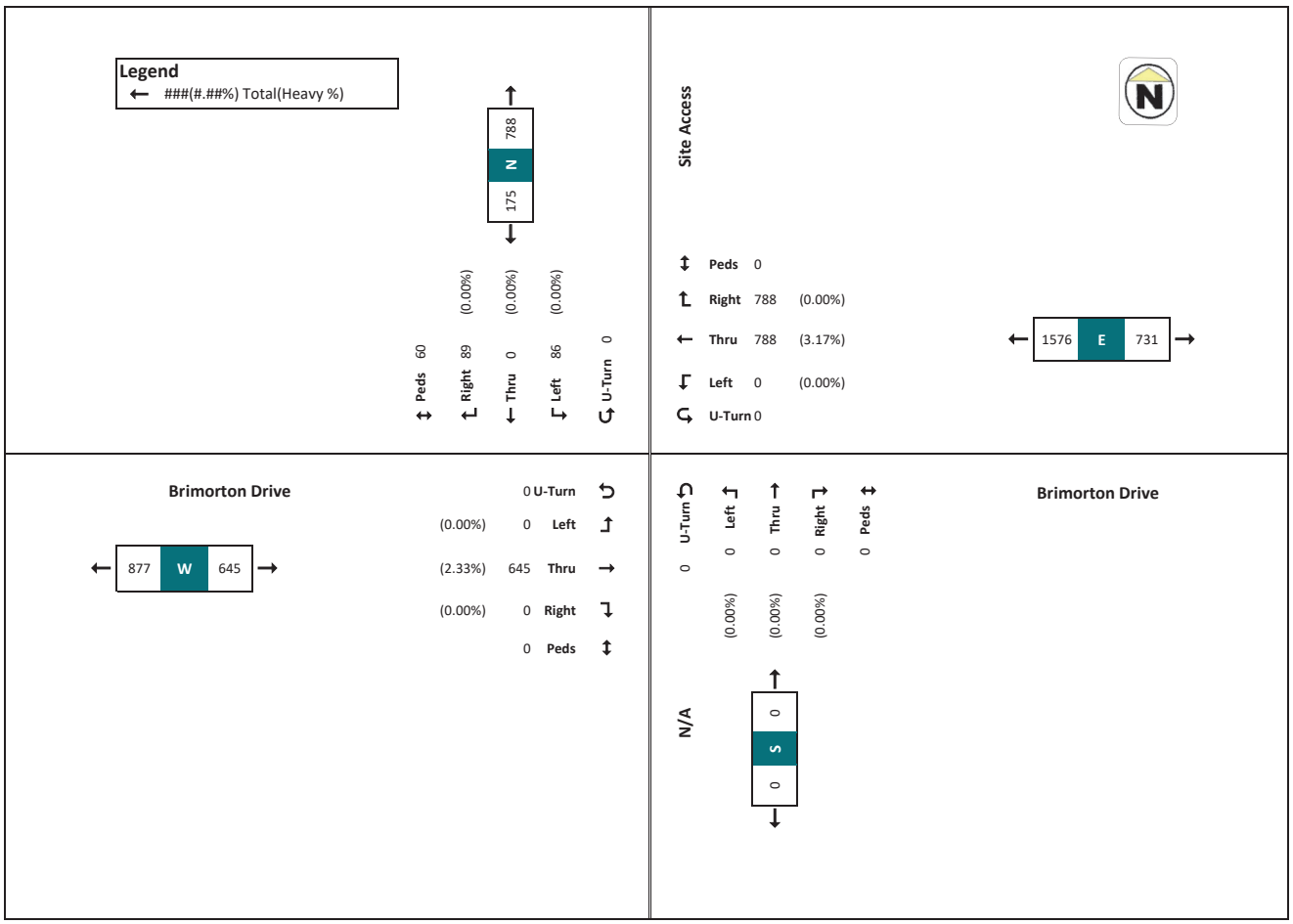


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Site Access & Brimorton Drive
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24058

Turning Movement Count - Site Access & Brimorton Drive

	Site Access Southbound						Brimorton Drive Westbound						N/A Northbound						Brimorton Drive Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:30	0	5	0	6	1	11	0	0	38	1	0	39	0	0	0	0	0	0	0	2	9	0	0	11	61
7:45	0	6	0	6	2	12	0	0	60	8	0	68	0	0	0	0	0	0	0	1	22	0	0	23	103
Hourly Total	0	11	0	12	3	23	0	0	98	9	0	107	0	0	0	0	0	0	0	3	31	0	0	34	164
8:00	0	6	0	4	1	10	0	0	53	5	0	58	0	0	0	0	0	0	0	1	46	0	0	47	115
8:15	0	2	0	9	0	11	0	0	66	3	0	69	0	0	0	0	0	0	0	5	48	0	0	53	133
8:30	0	5	0	10	1	16	0	0	53	6	0	59	0	0	0	0	0	0	0	8	45	0	0	53	128
8:45	0	6	0	7	1	13	0	0	43	7	0	50	0	0	0	0	0	0	0	2	28	0	0	30	93
Hourly Total	0	20	0	30	15	50	0	0	218	18	0	236	0	0	0	0	0	0	0	16	167	0	0	183	469
9:00	0	6	0	5	2	11	0	0	38	8	0	46	0	0	0	0	0	0	0	3	21	0	0	24	81
9:15	0	6	0	3	4	9	0	0	46	6	0	52	0	0	0	0	0	0	0	2	24	0	0	26	87
Hourly Total	0	12	0	8	6	20	0	0	84	14	0	98	0	0	0	0	0	0	0	5	45	0	0	50	168
* Break *																									
16:00	0	3	0	0	2	3	0	0	49	2	0	51	0	0	0	0	0	0	0	4	58	0	0	62	116
16:15	0	7	0	5	5	12	0	0	48	6	0	54	0	0	0	0	0	0	0	1	49	0	0	50	116
16:30	0	3	0	0	4	3	0	0	44	7	0	51	0	0	0	0	0	0	0	5	57	0	0	62	116
16:45	0	6	0	6	7	12	0	0	55	5	0	60	0	0	0	0	0	0	0	5	50	0	0	55	127
Hourly Total	0	19	0	11	18	30	0	0	196	20	0	216	0	0	0	0	0	0	0	15	214	0	0	229	475
17:00	0	8	0	5	6	13	0	0	34	6	0	40	0	0	0	0	0	0	0	2	45	0	0	47	100
17:15	0	5	0	5	2	10	0	0	47	3	0	50	0	0	0	0	0	0	0	8	48	0	0	56	116
17:30	0	7	0	12	3	19	0	0	54	14	0	68	0	0	0	0	0	0	0	8	54	0	0	62	149
17:45	0	4	0	6	3	10	0	0	57	8	0	65	0	0	0	0	0	0	0	4	41	0	0	45	120
Hourly Total	0	24	0	28	14	52	0	0	192	40	0	232	0	0	0	0	0	0	0	22	188	0	0	210	494
Grand Total	0	86	0	89	60	175	0	0	788	101	0	889	0	0	0	0	0	0	0	61	645	0	0	706	1770
Approach %	0.0%	49.1%	0.0%	50.9%	-	-	0.0%	0.0%	88.6%	11.4%	-	-							0.0%	8.6%	91.4%	0.0%	-	-	
Total %	0.0%	4.9%	0.0%	5.0%	-	9.9%	0.0%	0.0%	44.5%	5.7%	-	50.2%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	3.4%	36.4%	0.0%	-	39.9%	
Lights	0	86	0	89	-	175	0	0	763	101	-	864	0	0	0	0	-	0	0	61	630	0	-	691	1730
% Lights	-	100.0%	-	100.0%	-	100.0%	-	-	96.8%	100.0%	-	97.2%	-	-	-	-	-	-	-	100.0%	97.7%	-	-	97.9%	97.7%
Buses	-	0	0	0	-	0	-	0	24	0	-	24	-	0	0	0	-	0	-	0	15	0	-	15	39
% Buses	-	0.0%	-	0.0%	-	0.0%	-	-	3.0%	0.0%	-	2.7%	-	-	-	-	-	-	-	0.0%	2.3%	-	-	2.1%	2.2%
Trucks	-	0	0	0	-	0	-	0	1	0	-	1	-	0	0	0	-	0	-	0	0	0	-	0	1
% Trucks	-	0.0%	-	-	-	0.0%	-	-	0.1%	0.0%	-	0.1%	-	-	-	-	-	-	-	0.0%	0.0%	-	-	0.0%	0.1%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	60	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	60

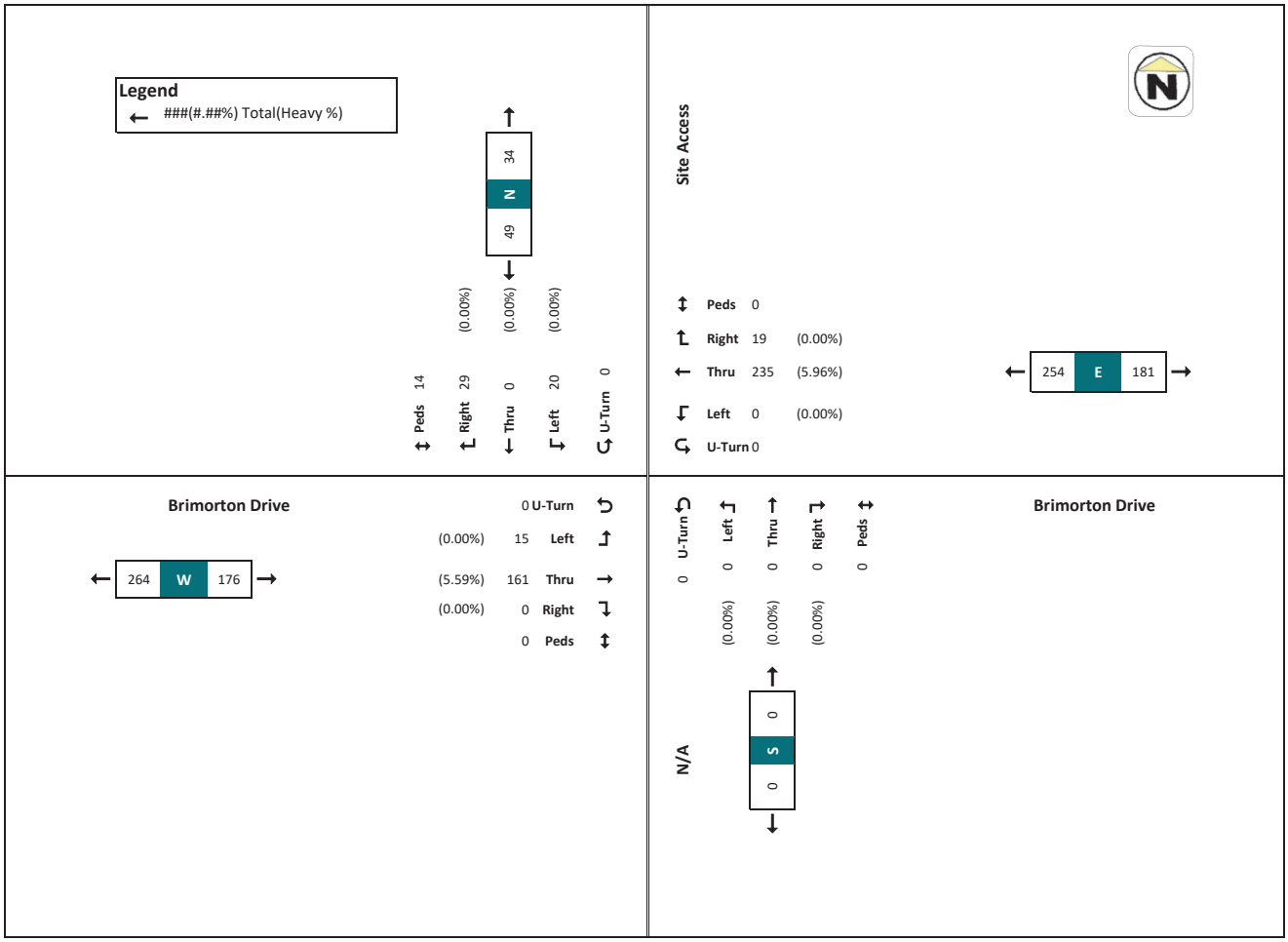


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Site Access & Brimorton Drive
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24058

AM Peak Hour - Site Access & Brimorton Drive

	Site Access Southbound						Brimorton Drive Westbound						N/A Northbound						Brimorton Drive Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
7:45	0	6	0	6	5	17	0	0	60	8	0	68	0	0	0	0	0	0	0	1	22	0	0	23	103
8:00	0	6	0	4	4	10	0	0	57	1	0	58	0	0	0	0	0	0	0	1	46	0	0	47	115
8:15	0	2	0	9	5	11	0	0	66	3	0	69	0	0	0	0	0	0	0	5	48	0	0	53	133
8:30	0	6	0	10	5	16	0	0	52	7	0	59	0	0	0	0	0	0	0	8	45	0	0	53	128
Hourly Total	0	20	0	29	14	49	0	0	235	19	0	254	0	0	0	0	0	0	0	15	161	0	0	176	479
Approach %	0.0%	40.8%	0.0%	59.2%	-	-	0.0%	0.0%	92.5%	7.5%	-	-	-	-	-	-	-	-	0.0%	8.5%	91.5%	0.0%	-	-	-
Total %	0.0%	4.2%	0.0%	6.1%	-	10.2%	0.0%	0.0%	49.1%	4.0%	-	53.0%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	3.1%	33.6%	0.0%	-	36.7%	-
PHF	0	0.83	0	0.73	-	0.77	0	0	0.89	0.59	-	0.92	0	0	0	0	0	0	0	0.47	0.84	0	-	0.83	0.9
Lights	0	20	0	29	-	49	0	0	221	19	-	240	0	0	0	0	0	0	0	15	152	0	-	167	456
% Lights	-	100.0%	-	100.0%	-	100.0%	-	-	94.0%	100.0%	-	94.5%	-	-	-	-	-	-	-	100.0%	94.4%	-	-	94.9%	95.2%
Buses	-	0	0	0	-	0	-	0	14	0	-	14	-	0	0	0	0	0	-	0	9	0	-	9	23
% Buses	-	0.0%	-	0.0%	-	0.0%	-	0	6.0%	0.0%	-	5.5%	-	-	-	-	-	-	-	0.0%	5.6%	0	-	5.1%	4.8%
Trucks	-	0	0	0	-	0	-	0	0	0	-	0	-	0	0	0	0	0	-	0	0	0	-	0	0
% Trucks	-	0.0%	-	0.0%	-	0.0%	-	-	0.0%	0.0%	-	0.0%	-	-	-	-	-	-	-	0.0%	0.0%	-	-	0.0%	0.0%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	14	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	14

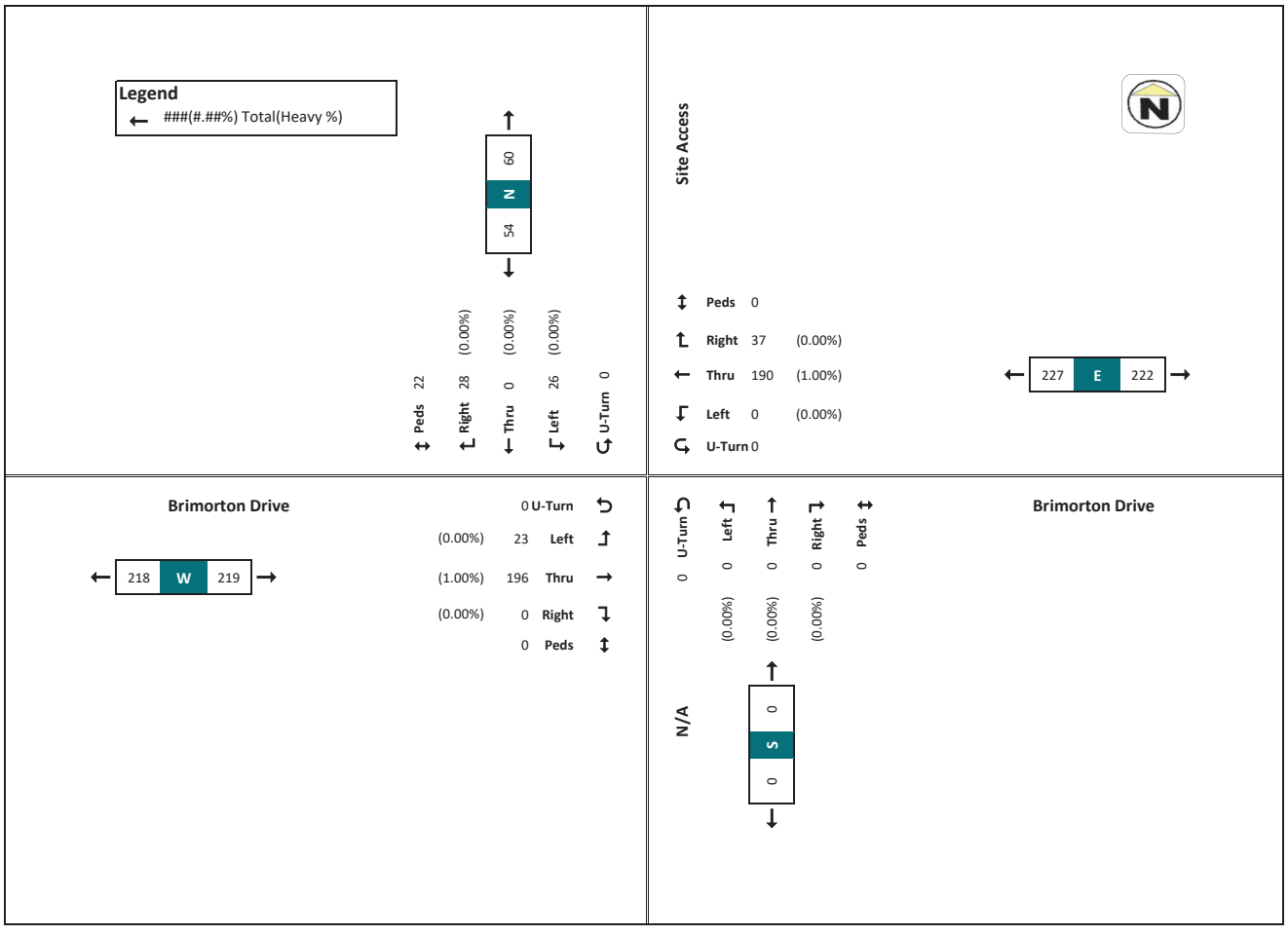


LEA Consulting Ltd.
625 Cochrane Drive, 5th Floor
Markham, ON L3R 9R9

Intersection : Site Access & Brimorton Drive
Survey Date : February 1, 2024
Project No. : 24159
Count ID : 24058

PM Peak Hour - Site Access & Brimorton Drive

	Site Access Southbound						Brimorton Drive Westbound						N/A Northbound						Brimorton Drive Eastbound						
Start Time	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Grand Total
16:45	0	6	0	6	7	12	0	0	55	5	0	60	0	0	0	0	0	0	0	5	50	0	0	55	127
17:00	0	8	0	5	6	13	0	0	34	6	0	40	0	0	0	0	0	0	0	2	45	0	0	47	100
17:15	0	5	0	5	5	10	0	0	47	12	0	59	0	0	0	0	0	0	0	8	48	0	0	56	125
17:30	0	7	0	12	3	19	0	0	54	14	0	68	0	0	0	0	0	0	0	8	54	0	0	62	149
Hourly Total	0	26	0	28	22	54	0	0	190	37	0	227	0	0	0	0	0	0	0	23	197	0	0	220	501
Approach %	0.0%	48.1%	0.0%	51.9%	-	-	0.0%	0.0%	83.7%	16.3%	-	-	-	-	-	-	-	-	0.0%	10.5%	89.5%	0.0%	-	-	
Total %	0.0%	5.2%	0.0%	5.6%	-	10.8%	0.0%	0.0%	37.9%	7.4%	-	45.3%	0.0%	0.0%	0.0%	0.0%	-	0.0%	0.0%	4.6%	39.3%	0.0%	-	43.9%	
PHF	0	0.81	0	0.58	-	0.71	0	0	0.86	0.66	-	0.83	0	0	0	0	-	0	0	0.72	0.91	0	-	0.89	0.84
Lights	0	26	0	28	-	54	0	0	189	37	-	226	0	0	0	0	-	0	0	23	196	0	-	219	499
% Lights	-	100.0%	-	100.0%	-	100.0%	-	-	99.5%	100.0%	-	99.6%	-	-	-	-	-	-	-	100.0%	99.5%	-	-	99.5%	99.6%
Buses	-	0	0	0	-	0	-	0	0	0	-	0	-	0	0	0	-	0	-	0	1	0	-	1	1
% Buses	-	0.0%	-	0.0%	-	0.0%	-	-	0.0%	0.0%	-	0.0%	-	-	-	-	-	-	-	0.0%	0.5%	-	-	0.5%	0.2%
Trucks	-	0	0	0	-	0	-	0	1	0	-	1	-	0	0	0	-	0	-	0	0	0	-	0	1
% Trucks	-	0.0%	-	0.0%	-	0.0%	-	-	0.5%	0.0%	-	0.4%	-	-	-	-	-	-	-	0.0%	0.0%	-	-	0.0%	0.2%
Bicycles	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	0
Pedestrians	-	-	-	-	22	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	22



LOCATION:	**Markham Rd & Ellesmere Rd**	*ATO / DISTRICT / WARD:*	**Area 1 / Scarborough / Ward 24**
MODE/COMMENT:	**SA1 with 2-Wire Polara APS & RLC (SB)**	*COMPUTER SYSTEM:*	**TransSuite**
TCS:	**702**	*CONTROLLER/CABINET TYPE:*	**Econolite ASC/3-2100 / TS2T1**
PREPARED BY/DATE:	**Arcadis / November 27, 2023**	*CONFLICT FLASH:*	**Red & Red**
CHECKED BY/DATE:	**Alaleh Adib / November 28, 2023**	*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
CITY STAFF:	**Jason Lee**	*CHANNEL/DROP:*	**4039/77**
IMPLEMENTATION DATE:	**December 18, 2023**	*CONTROLLER FIRMWARE:*	**2.47.10**

N

NEMA Phase		OFF	AM	PM	NGHT	WKND	Highway 401 Closure	Phase Mode	Remarks
		All Other Times	06:30-10:00 M-F	15:00-19:00 M-F	22:00-06:30 Daily	10:00-18:15 Sat & Sun		(Fixed/Demanded/Callable)	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 16		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 16		
1	WLK							Callable/extendable by setback loop	Pedestrian minimums: NSWK = 7 seconds, NSFD = 28 seconds
	FDW								EWWK = 7 seconds, EWFD = 27 seconds
	MIN 6								Left-turn passage time = 2 seconds
	MAX1 13								Extended push activation = 3 seconds
	AMB 3.3								APS on during full walk of NSWK & EWWK when activated by pushbutton and no left-turn arrows are displayed.
	ALR 5.7								
	SPLIT	22	20	24		26	15		
2 Markham Rd	WLK 7							Fixed	Grades are not considered in the calculation of AMB times.
	FDW 28								
	MIN 35								
	MAX1 42								
	AMB 3.3								
	ALR 3.2								
	SPLIT	49	45	49	49	42	42		
3 NOT USED	WLK								
	FDW								
	MIN								
	MAX1								
	AMB								
	ALR								
	SPLIT								
4 Ellesmere Rd	WLK 7							Fixed	
	FDW 27								
	MIN 34								
	MAX1 52								
	AMB 3.3								
	ALR 3.1								
	SPLIT	59	69	61	41	62	73		
5	WLK							Callable/extendable by setback loop	
	FDW								
	MIN 6								
	MAX1 9								
	AMB 3.3								
	ALR 4.6								
	SPLIT	17	18	15		19	15		
6 Markham Rd	WLK 7							Fixed	
	FDW 28								
	MIN 35								
	MAX1 47								
	AMB 3.3								
	ALR 3.2								
	SPLIT	54	47	58	49	49	42		
7	WLK							Callable/extendable by setback loop	
	FDW								
	MIN 6								
	MAX1 9								
	AMB 3.3								
	ALR 5.3								
	SPLIT	18	18	20		21	15		
8 Ellesmere Rd	WLK 7							Fixed	
	FDW 27								
	MIN 34								
	MAX1 34								
	AMB 3.3								
	ALR 3.1								
	SPLIT	41	51	41	41	41	58		
	CL	130	134	134	90	130	130		
	OF	117	42	16	58	42	107		

Notes:

LOCATION:	**Markham Rd & Brimorton Dr**	*DISTRICT:*	**Scarborough**
MODE/COMMENT:	**SA2 with PR, 2-wire Polara APS, LPI & RLC (NB)**	*COMPUTER SYSTEM:*	**Transuite**
TCS:	**703**	*CONTROLLER/CABINET TYPE:*	**Econolite ASC/3-2100 / TS2T1**
PREPARED BY/DATE:	**Amir Sufipour / September 16, 2022**	*CONFLICT FLASH:*	**Red & Red**
CHECKED BY/DATE:	**Bhanuja Karunamoorthy / September 16, 2022**	*DESIGN WALK SPEED:*	**1.0 m/s (FDW based on full crossing at 1.2 m/s)**
IMPLEMENTATION DATE:	**Spetember 16, 2022**	*CHANNEL/DROP:*	**4011 / 14**
		CONTROLLER FIRMWARE:	

N

NEMA Phase		OFF	AM	PM	NGHT	WKND	Phase Mode	Remarks
		All Other Times	06:30-10:00 M-F	15:00-19:00 M-F	22:00-06:30 Daily	10:00-18:15 Sat & Sun	(Fixed/Demanded/Callable)	
	Local Plan	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5		
	System Plan	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5		
1	WLK						Callable/Extendable by 9m setback loop	Pedestrian Minimums: NSWK = 7 seconds, NSFD = 15 seconds EWWK = 7 seconds, EWFD = 16 seconds
	FDW							
	MIN 6							EW phase is callable by vehicle or pedestrian actuation. If a vehicle call is received, the minimum EWG is 7 seconds. If ongoing vehicle demand exists on the Traficam detector or stop bar loop, the EWG is capable of providing vehicle extensions up to the maximum. If a pedestrian call is received, the pedestrian minimums would be served. The EWWK & EWFD are only displayed on the pedestrian signal heads if a pedestrian call is received. Extension time is based on vehicle/pedestrian demand and is taken from the NSG.
	MAX1 6							
	AMB 3.3							
	ALR 4.4							
	SPLIT			14				
2 Markham Rd	WLK 7						Fixed	
	FDW 15							
	MIN 22							
	MAX1 63							
	AMB 3.3							
	ALR 3.0							
	SPLIT	70	85	78	50	90		APS on during 7 seconds of NSWK & EWWK when activated by pushbutton and no left-turn arrows are displayed
3 NOT USED	WLK							Extended Push Activation = 3 seconds
	FDW							Side Street Passage Time = 3 seconds
	MIN							Left-Turn passage = 2 seconds
	MAX1							EW Leading Pedestrian Interval - EWWK comes up 5 seconds before EW vehicle green.
	AMB							
	ALR							
	SPLIT							
4 Brimorton Dr	WLK DLY 5							
	WLK 7						Callable by Stopbar Loop and/or Push Button Extendable by Stopbar Loop Split shown includes 5 seconds of EW LPI	
	FDW 16							
	MIN 7							
	MAX1 18							
	AMB 3.3							
	ALR 3.1							
	SPLIT	30	35	32	30	40		
5 NOT USED	WLK							
	FDW							
	MIN							
	MAX1							
	AMB							
	ALR							
	SPLIT							
6 Markham Rd	WLK 7						Fixed	
	FDW 15							
	MIN 22							
	MAX1 63							
	AMB 3.3							
	ALR 3.0							
	SPLIT	70	85	92	50	90		
7 NOT USED	WLK							
	FDW							
	MIN							
	MAX1							
	AMB							
	ALR							
	SPLIT							
8 Brimorton Dr	WLK DLY 5							
	WLK 7						Callable by Traficam detector and/or Push Button Extendable by Traficam detector Split shown includes 5 sec of EW LPI	
	FDW 16							
	MIN 7							
	MAX1 18							
	AMB 3.3							
	ALR 3.1							
	SPLIT	30	35	32	30	40		
	CL	100	120	124	80	130		
	OF	92	77	10	74	35		

APPENDIX C

Corridor Growth Calculations

* Edit things in BLUE

	AM Peak Hour				
	NB	SB	EB	WB	Overall
Markham Rd & Ellesmere Rd	0.00%	0.00%	0.00%	0.00%	0.00%

	PM Peak Hour				
	NB	SB	EB	WB	
Markham Rd & Ellesmere Rd	0.00%	0.00%	0.00%	0.00%	0.00%

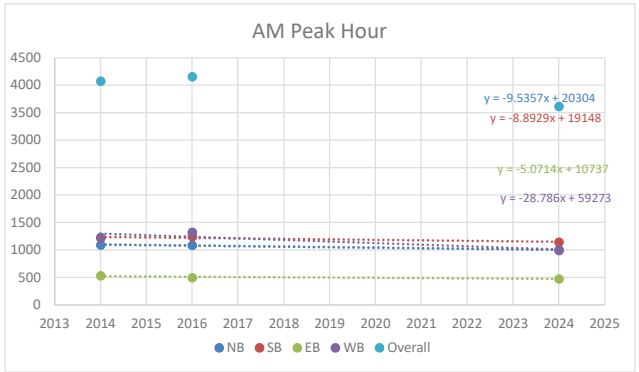
Assumptions and Reasonings:
Growth rate of 0% applied due to negative growth rates observed

Markham Rd & Ellesmere Rd

Intersection	Index	Movement	27-Mar-14					30-Nov-16					01-Feb-24				
			AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor	AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor	AM Peak	PM Peak	Sat Peak	AM Corridor	PM Corridor
1	1	NBL	104	95				102	101				124	136			
	2	NBT	966	959		1093	1105	939	921		1087	1088	851	930		1002	1112
	3	NBR	23	51				46	66				27	46			
1	4	SBL	192	415				181	219				197	288			
Markham Rd	5	SBT	752	1101		1218	1742	812	1088		1245	1510	751	972		1144	1419
&	6	SBR	274	226				252	203				196	159			
Ellesmere Rd	7	EBL	140	238				130	250				113	220			
	8	EBT	339	852		534	1205	335	743		499	1123	318	650		475	1003
	9	EBR	55	115				34	130				44	133			
	10	WBL	86	79				138	105				75	76			
	11	WBT	800	411		1229	700	835	445		1327	772	643	431		993	689
	12	WBR	343	210				354	222				275	182			

AM

	Markham Rd		Ellesmere Rd		
Year	NB	SB	EB	WB	Overall
2014	1093	1218	534	1229	4074
2016	1087	1245	499	1327	4158
2024	1002	1144	475	993	3614
Calcualated Growth Rates:	-0.95%	-0.78%	-1.07%	-2.90%	-1.45%
Applied Growth Rates:	0.0%	0.0%	0.0%	0.0%	0.0%



PM

	Markham Rd		Ellesmere Rd		
Year	NB	SB	EB	WB	Overall
2014	1105	1742	1205	700	4752
2016	1088	1510	1123	772	4493
2024	1112	1419	1003	689	4223
Calcualated Growth Rates:	0.12%	-1.85%	-1.87%	-0.54%	-1.12%
Applied Growth Rates:	0.0%	0.0%	0.0%	0.0%	0.0%