





Joshua Creek North

Traffic Impact Study

Mattamy

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Executive Summary

GHD Limited is pleased to provide the following Traffic Impact Study for the proposed Joshua Creek North residential development generally located on the south side of Burnhamthorpe Road East and west of Ninth Line in the Town of Oakville.

This report determines the site related traffic and subsequent traffic related impacts on the adjacent road network and site driveways during the weekday a.m. and p.m. peak hours. These impacts are based on the projected future background traffic and road network conditions derived for a 2031 and 2036 future planning horizon year.

Based on the approved Terms of Reference for the study, the following intersections were included in the study area:

Existing

- Trafalgar Road and Burnhamthorpe Road East
- Burnhamthorpe Road East and William Halton Parkway
- William Halton Parkway and Ninth Line

Future

- Burnhamthorpe Road East and Street A
- Burnhamthorpe Road East and Street D
- Burnhamthorpe Road East and Street E
- Burnhamthorpe Road East and Street L
- Burnhamthorpe Road East and Street N (west leg)
- Burnhamthorpe Road East and Street N (east leg)
- Street C and Street D
- Street A/J and Street B/K

A Draft Plan of Subdivision for Joshua Creek North prepared by Korsiak Urban Planning consists of a total 556 dwelling units. The breakdown between each unit type is as follows:

- 382 single detached dwelling units
- 96 street townhouse dwelling units
- 78 rear lane townhouse dwelling units

Access to the Joshua Creek North lands is proposed via six new proposed roads, 3 of which are located on the west side of the Natural Heritage System and generally connect to the lands to the south with the 3 other roadways serving the portion of the lands east of the Natural Heritage System.

Based on ITE Trip Generation rates, the subject site is expected to generate a total of 306 two-way vehicle trips during the a.m. peak hour consisting of 76 inbound and 230 outbound trips. During the p.m. peak hour, it is expected to generate 400 new two-way vehicle trips consisting of 248 inbound and 152 outbound trips.

Under existing traffic conditions, all intersections are operating at acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours. with the exception of:

- William Halton Parkway and Burnhamthorpe Road East
 - The northbound shared left/right-turn movement with a v/c ratio of 0.75 LOS E (a.m. peak hour)

Under the 2031 future background conditions, with the addition of corridor growth, background development traffic, and signal improvements, all intersections are operating at acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours with the exception of:

- William Halton Parkway and Burnhamthorpe Road East
 - The northbound shared left/right-turn movement with a v/c ratio of 1.57 LOS F (a.m. peak hour) and 0.90 LOS F (p.m. peak hour)
- William Halton Parkway/Burnhamthorpe Road West and Ninth Line
 - The northbound approach with a v/c ratio of 1.03 LOS F (p.m. peak hour – 15% y-intercept)
 - The westbound approach with a v/c ratio of 0.98 LOS F (p.m. peak hour – 15% y-intercept)

Under the 2031 future total conditions, with the redistribution of some of the background development traffic and the addition of site traffic from the proposed development, all intersections are reported to continue to operate with acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours with the exception of:

- Trafalgar Road and Burnhamthorpe Road East
 - The westbound left-turn movement with a v/c ratio of 0.97 LOS F (p.m. peak hour)
- William Halton Parkway and Burnhamthorpe Road East
 - The northbound shared left/right-turn movement with a v/c ratio of 2.71 LOS F (a.m. peak hour) and 1.30 LOS F (p.m. peak hour)
- William Halton Parkway/Burnhamthorpe Road West and Ninth Line
 - The eastbound approach with a v/c ratio of 1.06 LOS F (a.m. peak hour – 15% y-intercept)
 - The northbound approach with a v/c ratio of 1.14 LOS F (p.m. peak hour – 15% y-intercept)
 - The westbound approach with a v/c ratio of 1.07 LOS F (p.m. peak hour – 15% y-intercept)

Under the 2036 future background conditions, with the addition of corridor growth, background development traffic, and signal improvements, all intersections are operating at acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours with the exception of:

- William Halton Parkway and Burnhamthorpe Road East
 - The northbound shared left/right-turn movement with a v/c ratio of 2.10 LOS F (a.m. peak hour) and 1.13 LOS F (p.m. peak hour)
- William Halton Parkway/Burnhamthorpe Road West and Ninth Line
 - The eastbound approach with a v/c ratio of 1.01 LOS F (a.m. peak hour – 15% y-intercept)
 - The northbound approach with a v/c ratio of 1.18 LOS F (p.m. peak hour – 15% y-intercept)
 - The westbound approach with a v/c ratio of 1.06 LOS F (p.m. peak hour – 15% y-intercept)

Under the 2036 future total conditions, with the redistribution of some of the background development traffic and the addition of site traffic from the proposed development, all intersections are reported to continue to operate with acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours with the exception of:

- Trafalgar Road and Burnhamthorpe Road East
 - The overall intersection with a v/c ratio of 0.93 LOS C (p.m. peak hour)
 - The eastbound shared through/right-turn movement with a v/c ratio of 0.86 LOS E (a.m. peak hour)
 - The westbound left-turn movement with a v/c ratio of 0.97 LOS F (a.m. peak hour)
- William Halton Parkway and Burnhamthorpe Road East
 - The northbound shared left/right-turn movement with a v/c ratio of 3.42 LOS F (a.m. peak hour) and 1.57 LOS F (p.m. peak hour)
- William Halton Parkway/Burnhamthorpe Road West and Ninth Line
 - The eastbound approach with a v/c ratio of 1.19 LOS F (a.m. peak hour – 15% y-intercept)
 - The northbound approach with a v/c ratio of 1.31 LOS F (p.m. peak hour – 15% y-intercept) and 1.01 LOS F (p.m. peak hour – 0% y-intercept)

- The westbound approach with a v/c ratio of 1.15 LOS F (p.m. peak hour – 15% y-intercept) and 1.01 LOS F (p.m. peak hour – 0% y-intercept)

GHD completed a sensitivity analysis for the intersection of William Halton Parkway and Burnhamthorpe Road East to identify the required lane configuration and traffic controls under the future horizon years. The sensitivity analysis was completed with a four-lane cross-section along William Halton Parkway in addition to signaling the intersection (with the four-lane cross-section and an exclusive westbound left-turn lane). It should be noted that the traffic volumes at both study intersections are significantly increased under the 2031 and 2036 horizon year due to corridor growth and the re-distribution of background development traffic. The Region should continue to monitor the operation of Regional roadways to determine when improvements become warranted. A signal warrant was also completed under Future Background 2031 conditions and confirmed that a traffic signal is warranted for the intersection of William Halton Parkway and Burnhamthorpe Road East.

Some TDM measures are proposed for the development including connected sidewalks and pathways, transit accessibility, TDM Education Campaigns and traffic calming measures to encourage residents to explore alternatives to reduce single-occupant vehicle trips.

Application of the Town of Oakville Zoning By-Law 2009-189 parking rates to the subject site results in a requirement of a minimum of 938 parking spaces. Each single and semi-detached dwelling unit will contain a minimum of two parking spaces (one in the garage and one in the driveway) while the townhouse dwelling units are proposed to contain at least one parking space, satisfying the Town's requirement.

A parking plan prepared for the subject site identified a total of 244 on-street visitor parking spaces are available to meet the Town's objectives.

The proposed roadway geometric elements were revised and confirmed that the right-of-way, daylight triangles, and corner clearances requirements have generally been met. The proposed intersections are also generally consistent with the road network set out in the Burnhamthorpe Road Study and Class EA.

Traffic calming measures and future transit routes have been planned for the subject site to enhance safety and connectivity. Curb bump-outs are proposed at key locations with anticipated higher pedestrian crossing volumes, such as near schools, parks, and community hubs, to improve visibility, reduce crossing distances, and slow vehicle speeds.

Transit routes and stops have been strategically identified in alignment with the North Oakville East Secondary Plan's Transportation Plan, ensuring connectivity to regional transit hubs and local destinations. These transit stops are designed to maximize accessibility and integrate with pedestrian and cycling infrastructure.

The traffic study concludes that the proposed residential development can be integrated into the existing and planned road network without causing significant impacts on traffic flow, capacity, or safety.

We trust that this satisfies your requirements, but do not hesitate to contact the undersigned if you have any questions.

Sincerely,

GHD



Rafael Andrenacci, B.Eng
Transportation Planner



William Maria, P. Eng.
Transportation Planning Lead

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1. Introduction

1.1 Retainer and Objective

GHD Limited was retained to prepare a Traffic Impact Study for a residential development on lands known as Joshua Creek North located south of Burnhamthorpe Road, east of Ninth Line in the Town of Oakville.

The site location is illustrated in **Figure 1**.

The purpose of this study is to:

- Establish baseline traffic conditions for the study area in 2024 and determine future background operating conditions for a future planning horizon in 2031 and 2036.
- Estimate the site trips generated by the proposed development and distribute the traffic to the adjacent road network.
- Determine future operating traffic conditions during the weekday peak periods through intersection capacity analysis.

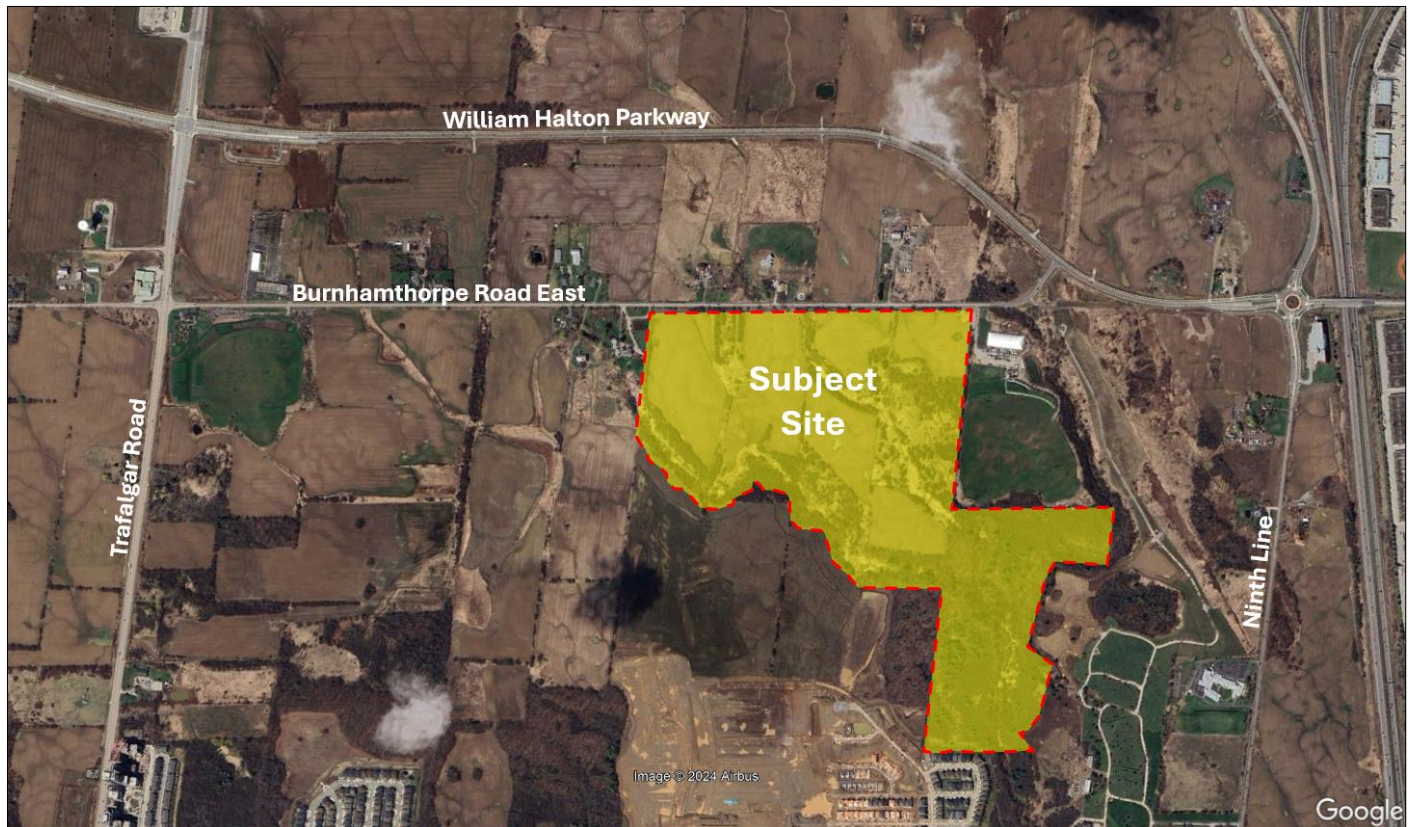


Figure 1 Site Location

1.2 Study Team

The GHD team involved in the preparation of the study are:

- William Maria, P. Eng., Transportation Planning Lead
- Rafael Andrenacci, B.Eng., Transportation Planner

2. Site Characteristics

2.1 Study Area

As per the agreed Terms of Reference for the study attached in **Appendix A**, the following intersections were included in the study area:

- Existing
 - Trafalgar Road and Burnhamthorpe Road East
 - Burnhamthorpe Road East and William Halton Parkway
 - William Halton Parkway and Ninth Line
- Future
 - Burnhamthorpe Road East and Street A
 - Burnhamthorpe Road East and Street D
 - Burnhamthorpe Road East and Street E
 - Burnhamthorpe Road East and Street L
 - Burnhamthorpe Road East and Street N (west leg)
 - Burnhamthorpe Road East and Street N (east leg)
 - Street C and Street D
 - Street A/J and Street B/K

2.2 Proposed Development Content

A draft plan of subdivision prepared by Korsiak Urban Planning is shown in **Figure 2** and provided in **Appendix B**. The proposed development consists of a total 556 dwelling units. The breakdown between each unit type is as follows:

- 382 single detached dwelling units
- 96 street townhouse dwelling units
- 78 rear lane townhouse dwelling units

A Natural Heritage System divides the Joshua Creek 7 lands into two areas. Access to the east area is provided via three new roads intersecting with Burnhamthorpe Road East (Street L and both legs of Street N). Access to the west leg is similarly provided via three new roads (Street A, Street D, and Street E) in addition to two connections to the lands to the south (Street C and Street B) that provide further access to Wheat Boom Drive and Dundas Street East.

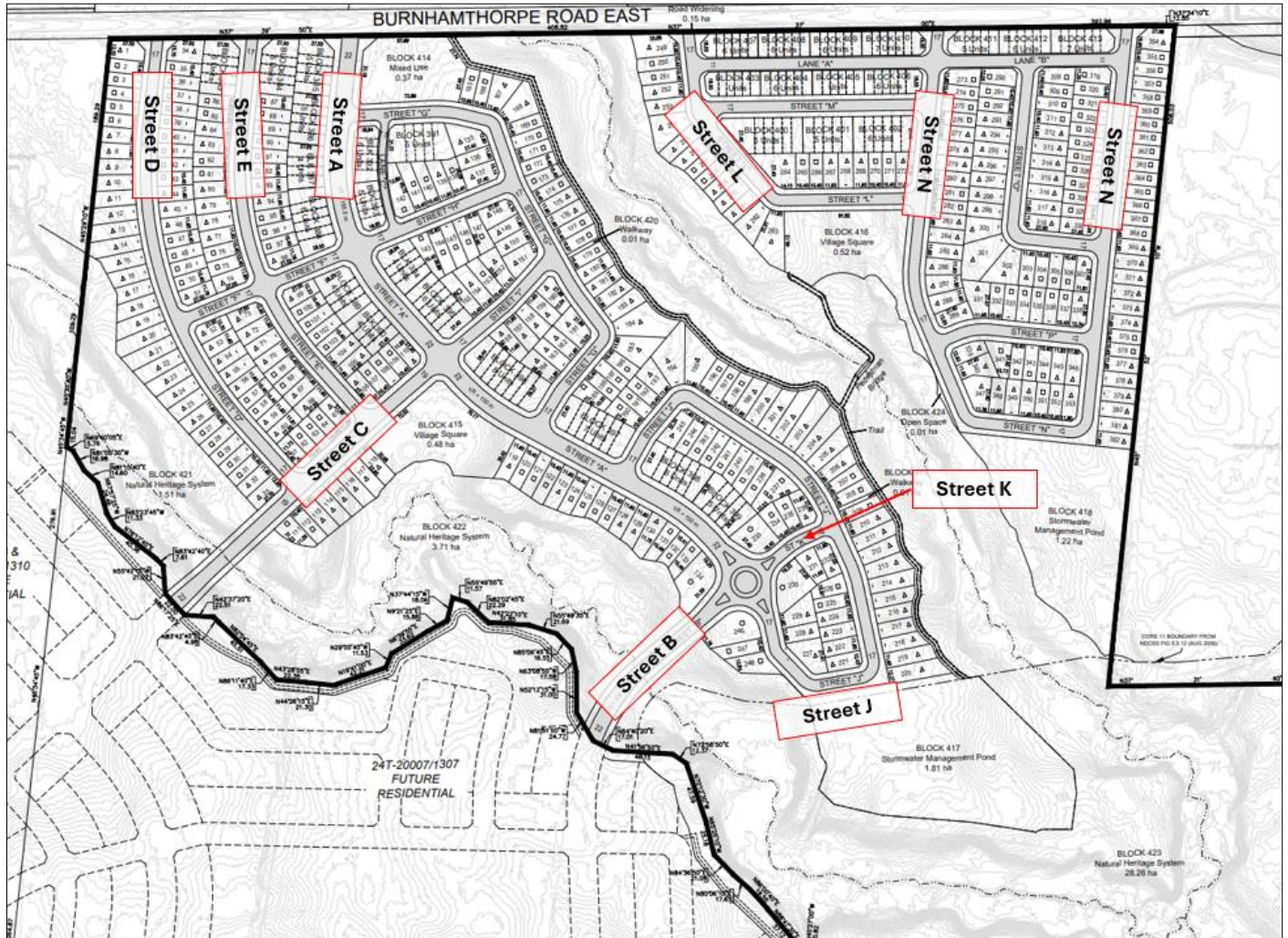


Figure 2 Draft Plan of Subdivision

3. Existing Conditions

3.1 Existing Road Network

Burnhamthorpe Road East is an east/west Avenue/Transit Corridor road under the jurisdiction of the Town of Oakville. Within the study area it has a two-lane cross-section. Its intersection with Trafalgar Road is signalized with auxiliary left-turn lanes provided in the eastbound and westbound directions. Its intersection with William Halton Parkway is unsignalized with the stop-control only provided along the south approach. The posted speed limit along Burnhamthorpe is 60 km/h and reduced to 40 km/h within 230 metres of its intersection with William Halton Parkway.

William Halton Parkway is an east/west Major Arterial/Transit Corridor under the jurisdiction of Halton Region. Within the study area it has a two-lane cross-section which widens to a four-lane cross-section as it approaches the roundabout with Ninth Line. Its intersection with Burnhamthorpe Road East is unsignalized with the stop-control only provided along the south approach while its intersection with Ninth Line is a roundabout. The posted speed limit along William Halton Parkway is 60 km/h.

Trafalgar Road is a north/south Major Arterial/Transit Corridor under the jurisdiction of Halton Region. Within the study area it has a two-lane cross-section. Its intersection with Burnhamthorpe Road East is signalized with an

auxiliary left-turn lane in the northbound and southbound directions. The posted speed limit along Trafalgar Road is 80 km/h.

Ninth Line is a north/south Major Arterial/Transit Corridor under the jurisdiction of Halton Region. Within the study area it has a two-lane cross-section which widens to a four-lane cross-section as it approaches the roundabout intersection with William Halton Parkway. The posted speed limit along Ninth Line is 60 km/h.

The existing lane configurations and intersection control are shown in the figure below.

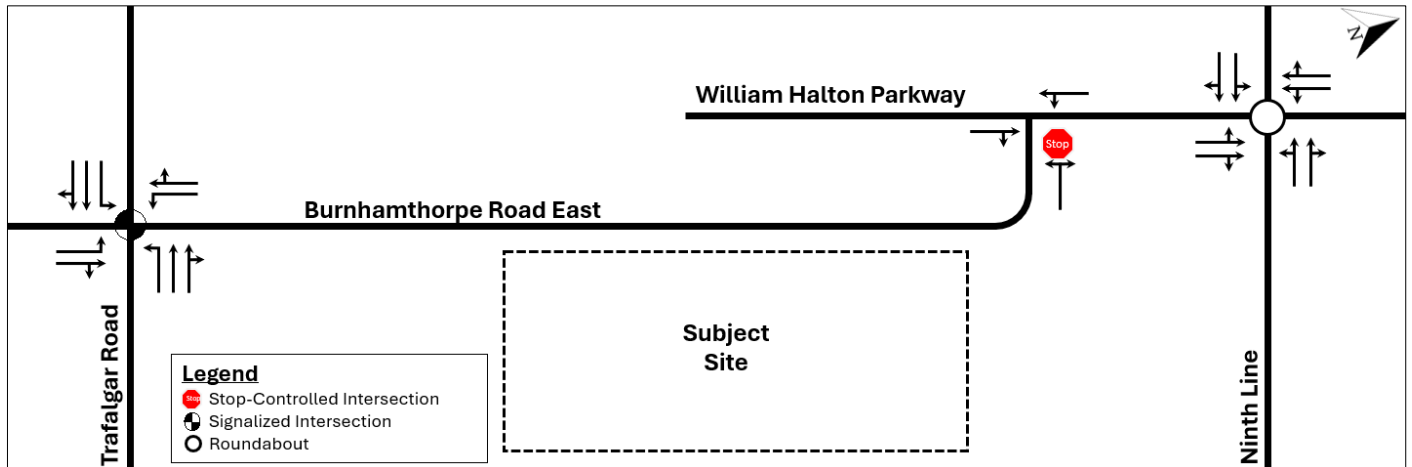


Figure 3 Existing Lane Configuration and Traffic Controls

3.2 Pedestrian and Bicycle Facilities

Within the study area, pedestrian and cycling infrastructure is generally provided only along William Halton Parkway and along Trafalgar Road and Ninth Line adjacent to William Halton Parkway

Pedestrian infrastructure is provided within the study area as follows:

- A sidewalk along the north side of William Halton Parkway only

Cycling infrastructure is provided within the study area as follows:

- A bike lane on both sides of William Halton Parkway

Multi-use paths are also provided within the study area as follows:

- Multi-use paths along both sides of Trafalgar Road adjacent to William Halton Parkway
- A multi-use path the south side of William Halton Parkway adjacent to Trafalgar Road
- Multi-use paths in the four quadrants of the William Halton Parkway and Ninth Line roundabout

The pedestrian and bicycle routes are illustrated in the figure below.

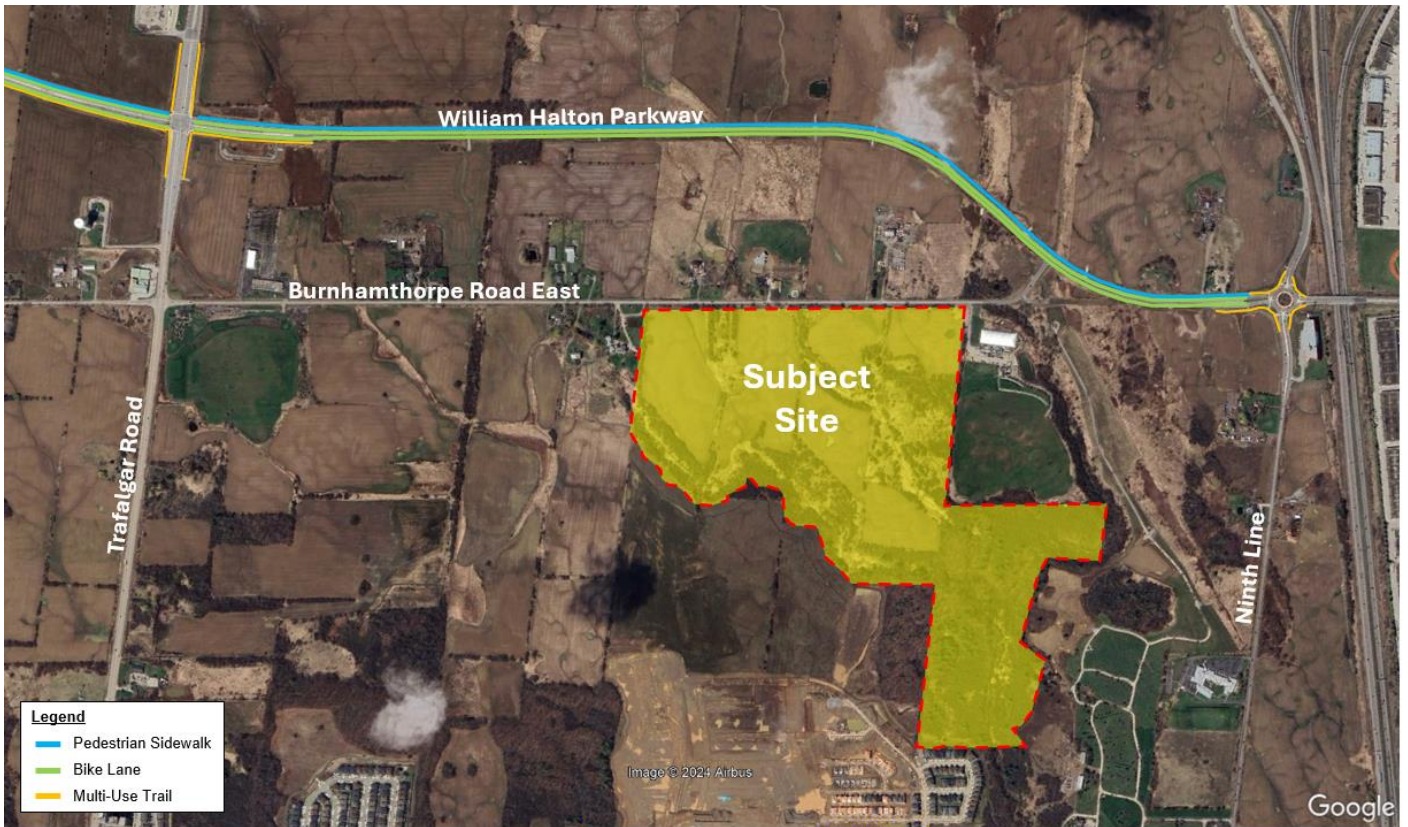


Figure 4 Existing Active Transportation Facilities

3.3 Transit Services

Oakville Transit currently offers transit service along Route 1 within the study area. Route 1 (**Trafalgar**) operates in the north/south direction along Trafalgar Road between the Oakville GO Station and the Trafalgar Road and Highway 407 Park & Ride lot. The nearest transit stop is located at the intersection of Trafalgar Road and Burnhamthorpe Road East with headways of 1-hour throughout the day.

GO Transit operates Routes 22 (**Milton/Oakville**) and 56 (**Oshawa/Oakville**) along Trafalgar Road within the study area. Route 22 operates between the Oakville and Milton GO Stations with headways of approximately 2 hours. Route 56 operates between the Oakville and Durham College Oshawa GO Stations, including stops at the Square One Bus Terminal, Bramalea GO Station, and Unionville GO Station, with headways of approximately 30 minutes throughout the day.

The existing transit routes and their transit stops within the study area are shown in the figure below.

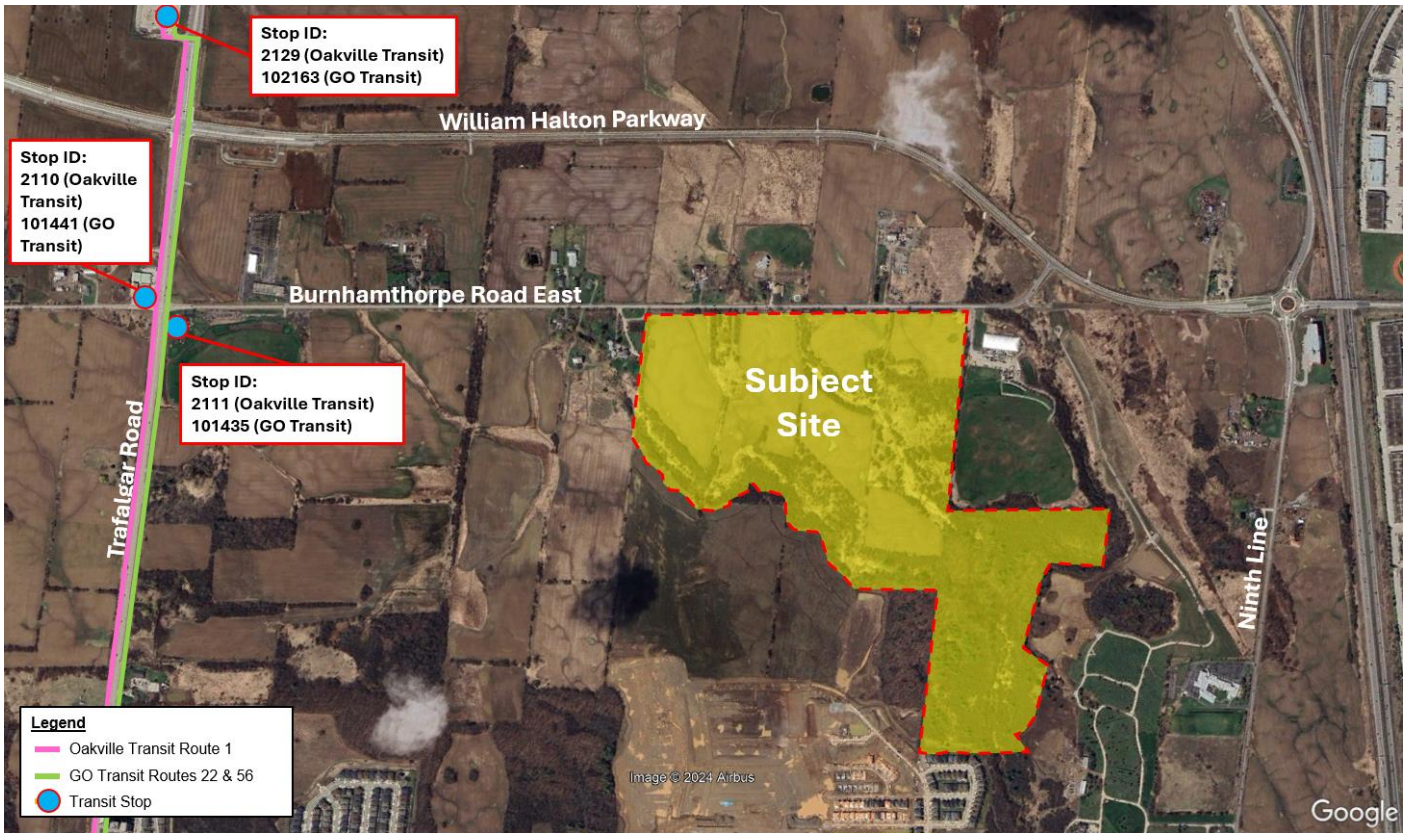


Figure 5 Existing Transit Routes and Transit Stops

3.4 Existing Traffic Data

GHD contracted Ontario Traffic Inc. to conduct updated turning movement counts at all existing study intersections in October 2024. The baseline 2024 traffic volumes for the a.m. and p.m. peak hours are summarized in **Figure 6** below with the full turning movement counts provided in **Appendix C**.

Signal timings were also provided by Halton Region and included in **Appendix C**.

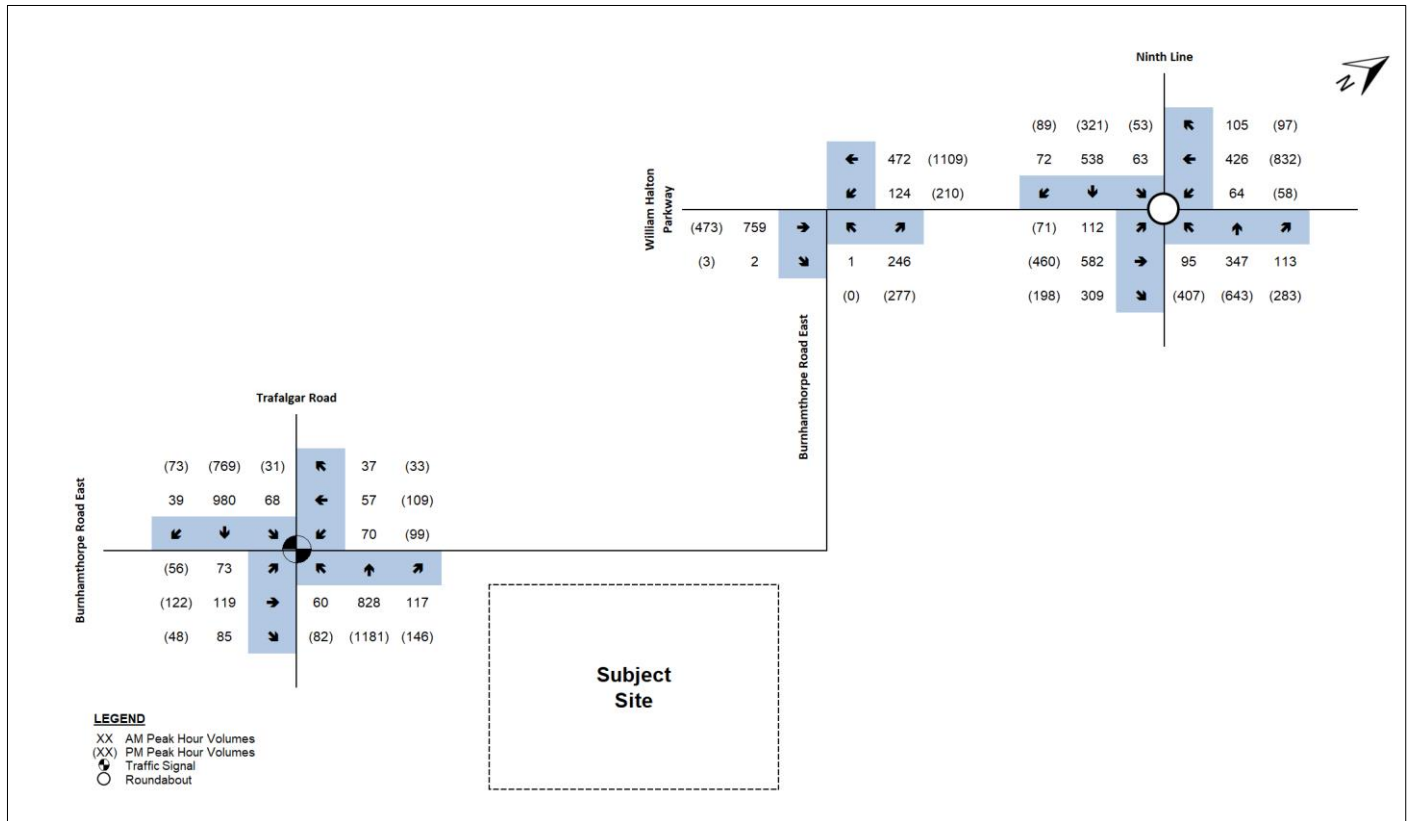


Figure 6 Baseline 2024 Traffic Volumes

4. Future Conditions

4.1 Study Horizon Year

Future horizon years of 2031 and 2036 were selected for the analysis of future traffic conditions, corresponding to the anticipated year of build-out and a period of five years post build-out as required by Town staff through the Terms of Reference.

4.2 Corridor Growth

The growth rates used to project the 2031 and 2036 traffic volumes were provided by Town staff, with a 3.5% per annum growth rate applied uniformly to all movements. As the Region did not provide specific growth rates, a 2% annual growth rate was applied to William Halton Parkway and Trafalgar Road to ensure consistency in projecting traffic volumes with Traffic Impact Studies completed for surrounding developments.

4.3 Background Development Traffic

The following developments were identified by Town of Oakville staff as being located in close proximity to the subject site that would generate additional traffic along the study area roadways:

- Rampen Holdings Inc. (1086 Burnhamthorpe Road East)
- Mattamy (Joshua Creek) Limited - Phase 3
- 1187 Burnhamthorpe Road East

- 4233, 4040 and 4180 Trafalgar Road
- Northwest quadrant of Burnhamthorpe Road & Ninth Line.
 - 4 employment/industrial office buildings, total GFA of 30,890
 - Two industrial warehouse buildings, total GFA of 84,066 m²
- Southwest quadrant of the Burnhamthorpe Road West/William Halton Parkway/Ninth Line intersection
 - Two industrial warehouse buildings, total GFA of 35,000 m²

There is an additional proposed development located at 1187 Burnhamthorpe Road East identified by Town staff, however, GHD could not find any relevant information for this development in the Town of Oakville's development application portal. It is GHD's understanding that the development is a Zoroastrian Place of Worship and has assumed the development would generate a negligible amount of traffic during the typical commuter peak hours. As a result, this development was excluded from the list of background developments.

The locations of the background developments are shown in **Figure 7** below.

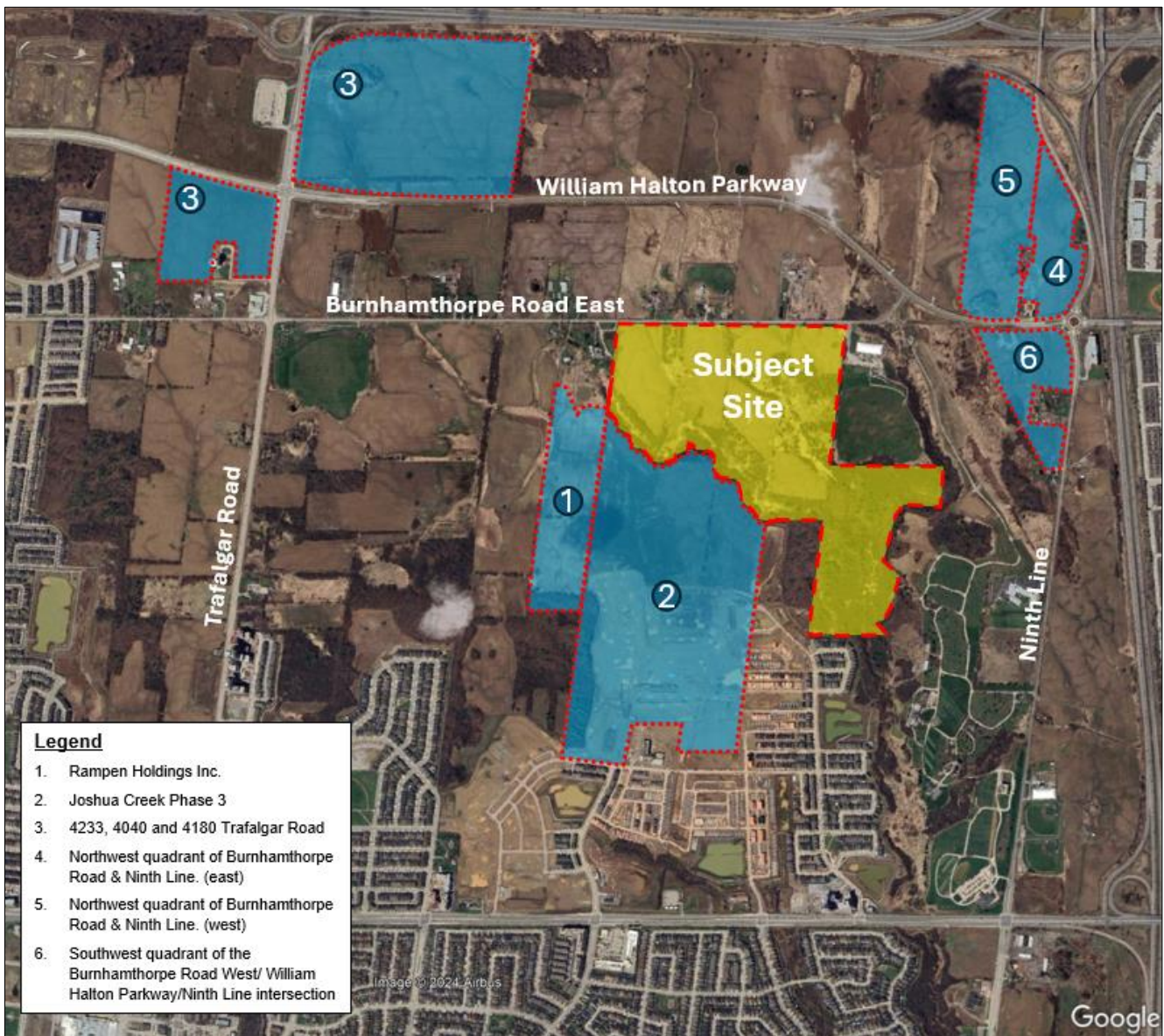


Figure 7 Location of Background Developments

The estimated site trips generated by the proposed background developments were extracted from their respective Traffic Impact Study, where available. The three industrial developments do not have Traffic Impact Studies, and as a result GHD generated site traffic and assigned them to the road network based on information provided by Town staff.

The Rampen Holdings Inc. and Mattamy Joshua Creek Phase 3 traffic studies did not assume the road connection through Joshua Creek North lands and therefore did not assign site traffic to Burnhamthorpe Road East. As a result, at the request of Town staff, GHD assumed the following in establishing the future background total volumes:

- a 50/50 split between traffic heading north to Burnhamthorpe Road East and heading south to Dundas Street can be assumed to re-assign site trips from the two respective background developments.
- The six proposed roads within Joshua Creek North will not be constructed/operational until the full build-out of the lands under future total scenarios. As a result, the re-distribution of the site traffic for both background developments will not take place until future total conditions. This is reflective in **Figure 8** and **Figure 9** below in which the two developments are not included in the total background development traffic but are considered as re-distributed traffic.
- The school component in the Joshua Creek Phase 3 development generated a significant amount of traffic. It was assumed that only 25% of inbound and outbound traffic from the school came from and departed towards the Joshua Creek North lands.

The total trip generation for each development is summarized in **Table 1** below with detailed excerpts from the background studies attached in **Appendix D**.

Table 1 Background Development Traffic

Background Development (ID on Figure 7)	Project Statistics	Peak Hour Trips					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
Rampen Holdings Inc. (Location 1)	132 Single Family Detached units and 56 Single Family Attached unit	32	87	119	98	61	159
Joshua Creek Phase 3 (Location 2)	1,015 Single Family Detached units and a 700-student elementary school	423	627	1,050	481	325	806
4233, 4040 and 4180 Trafalgar (Location 3)	3,220 residential units and 45,189 m ² employment GFA	589	565	1,154	674	764	1,438
NW quadrant of Burnhamthorpe Road & Ninth Line (Location 4)	4 employment/industrial office buildings, total GFA of 30,890	85	21	106	24	80	104
NW quadrant of Burnhamthorpe Road & Ninth Line (Location 5)	Two industrial warehouse buildings, total GFA of 84,066 m ²	119	35	154	46	117	163

SW quadrant Burnhamthorpe Road West/William Halton Parkway/Ninth Line intersection. (Location 6)	Two industrial warehouse buildings, total GFA of 35,000 m ²	53	16	69	20	52	72
Total		1,301	1,351	2,652	1,343	1,399	2,742

The total background development traffic from the background developments is summarized in **Figure 8**.

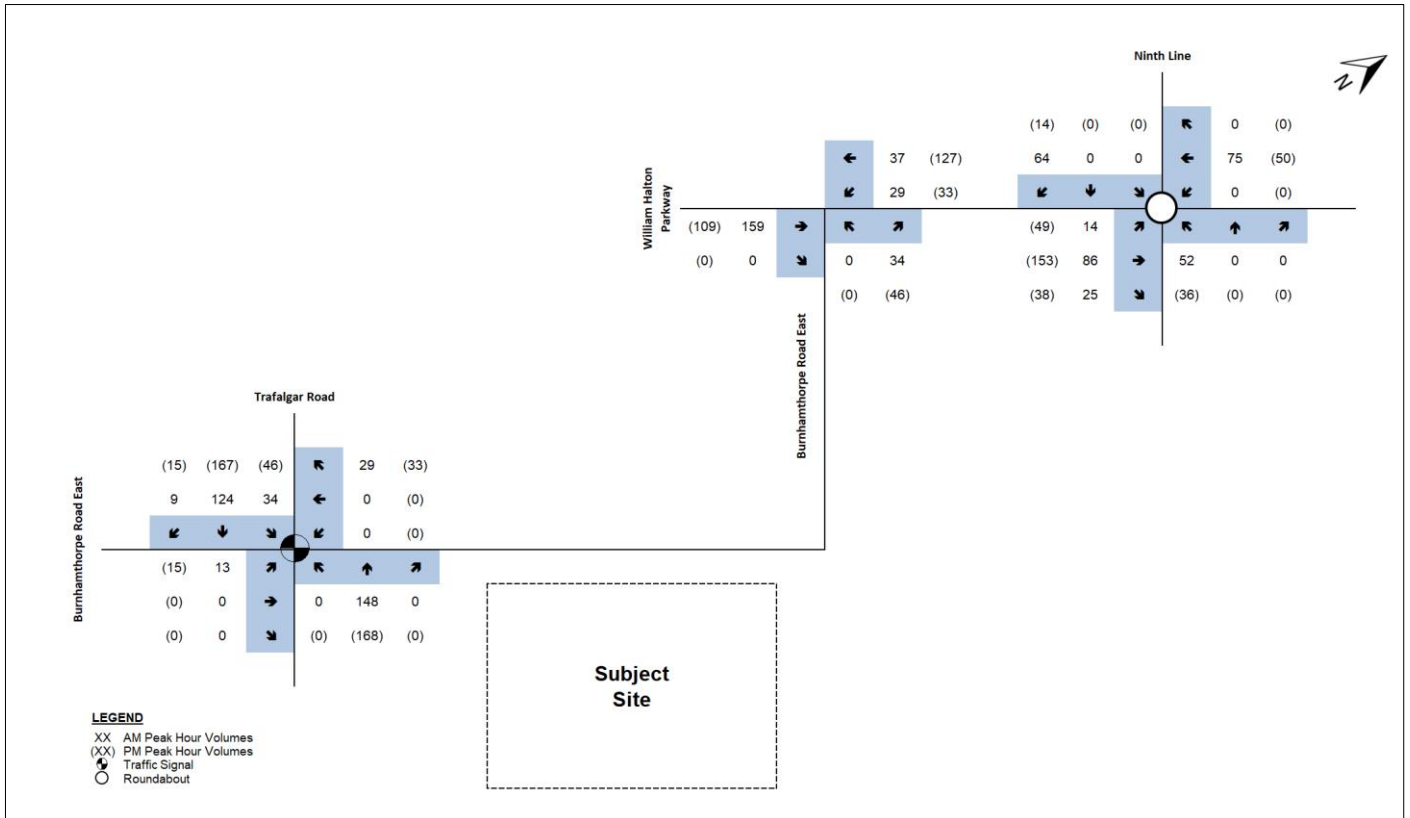


Figure 8 Total Background Development Traffic

The re-distributed traffic from the Rampen and Joshua Creek Phase 3 developments is summarized in **Figure 9**.

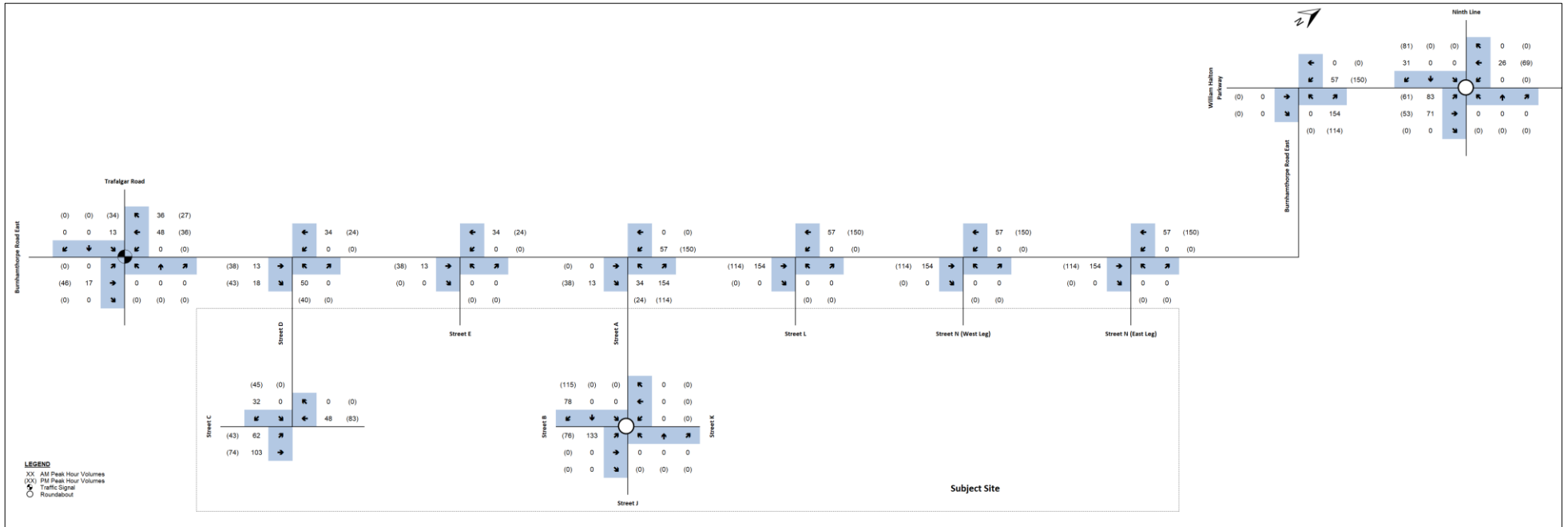


Figure 9 Background Development Redistribution

4.4 Roadway Improvements

Halton Region is currently on Phase 2 of the Trafalgar Road Improvements, which includes the section from Hays Boulevard to William Halton Parkway. The road improvements include, but are not limited to, a widening from four to six lanes, new sidewalks new multi use pathways, and new bus stops and shelters.

Construction was scheduled to begin in 2024 with Phase 2 construction projected to be completed in 2026. As a result, it is assumed that the widening of Trafalgar Road within the study area will be completed within the 2031 horizon year.

4.5 Future Lane Configuration

With the development of the subject site, it is proposed to construct 6 new roadways that would intersect Burnhamthorpe Road East as unsignalized intersections.

The development also proposes to include two new roadways over the Natural Heritage System towards the lands to the south.

The future proposed road network and its lane configuration is shown in **Figure 10**.

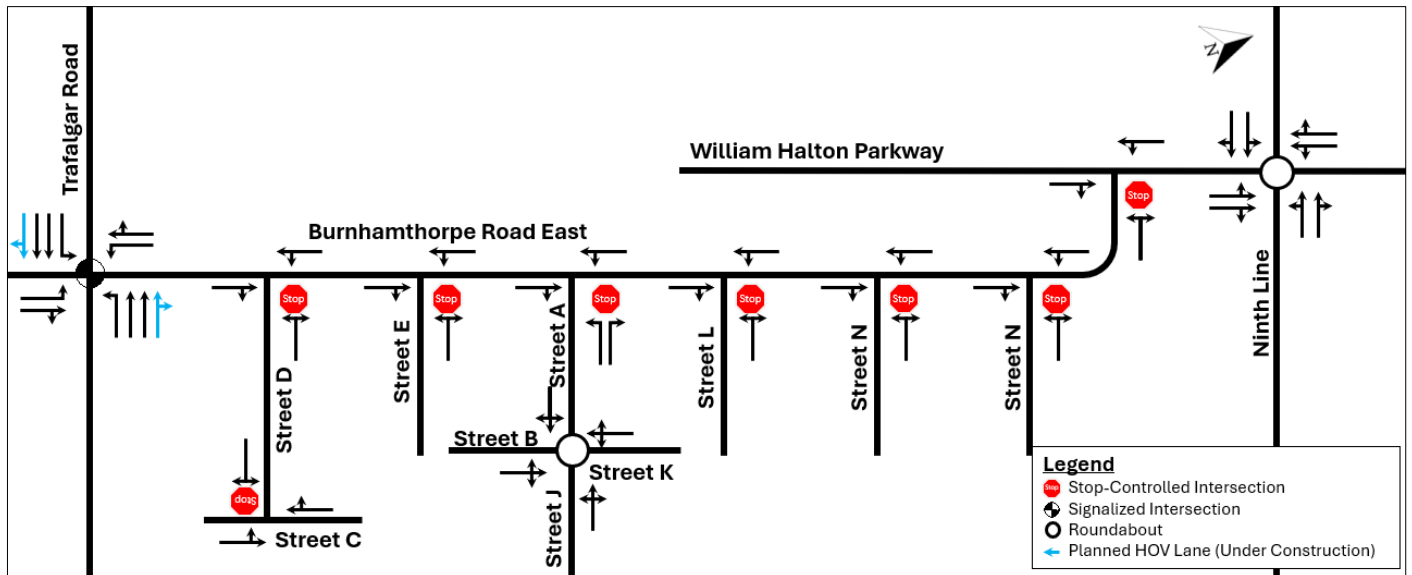


Figure 10 Future Lane Configuration

4.6 Future Background Traffic Volumes

The future background traffic volumes for the 2031 and 2036 horizon year were derived by applying the 3.5% per annum growth rates to the study area roads and the total background development traffic from **Figure 8**. The resulting 2031 and 2036 future background traffic volumes are summarized in **Figure 11** and **Figure 12**.

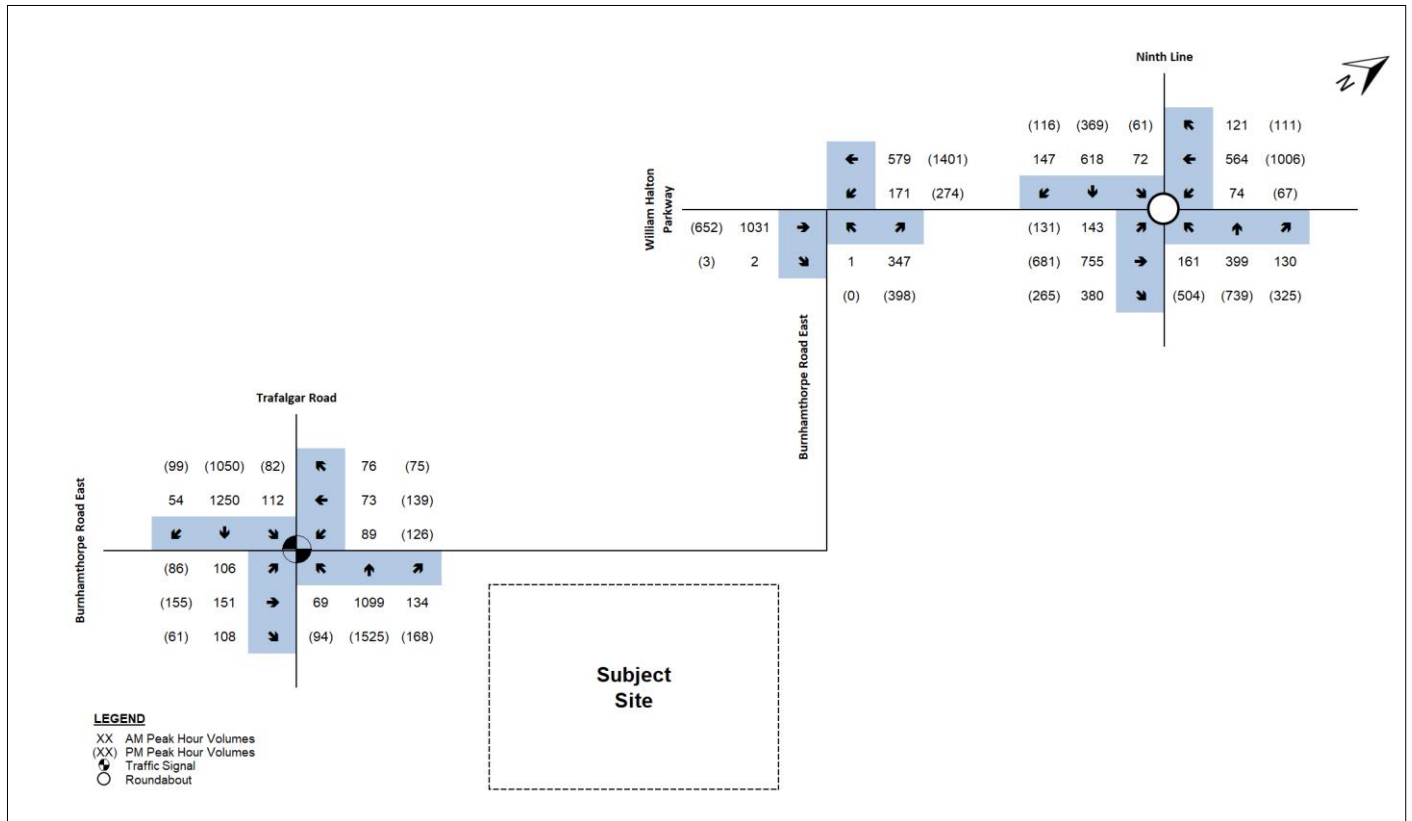


Figure 11 2031 Future Background Traffic Volumes

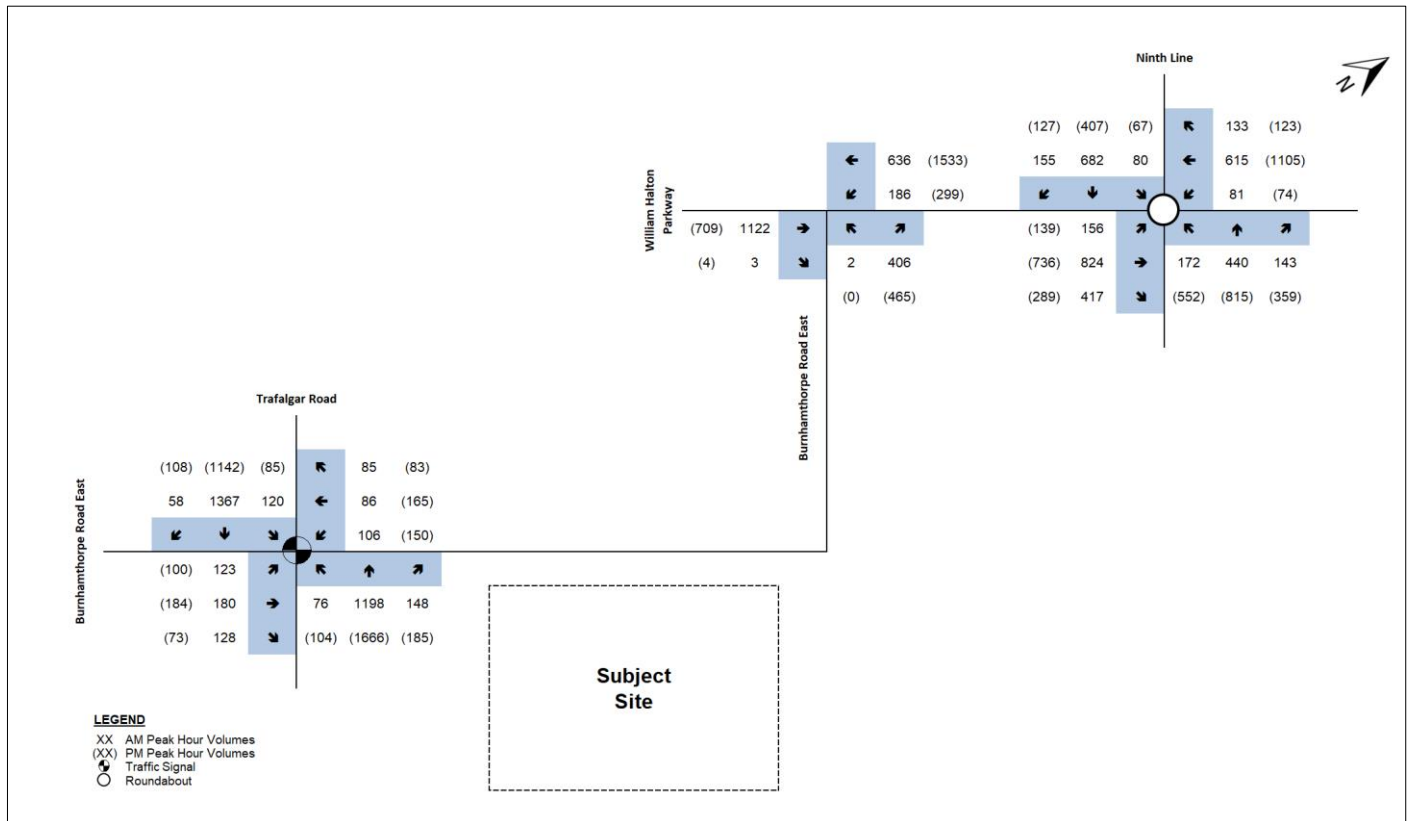


Figure 12 2036 Future Background Traffic Volumes

5. Site Generated Traffic

5.1 Site Trip Generation

The proposed development consists of a total consists of a total 556 dwelling units. The breakdown between each unit type is as follows:

- 382 single detached dwelling units
- 96 street townhouse dwelling units
- 78 rear lane townhouse dwelling units

Site traffic generated by the proposed development for the weekday a.m. and p.m. peak hours was estimated by applying the trip rates for Land Use Code (LUC) 210 (Single Family Attached Housing) and 215 (Single Family Attached Housing) in the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE).

The Single Family Detached Housing LUC was applied to all single detached dwelling units and the Single Family. A comparison of the fitted curve equations and average rates for each individual Land Use Code was completed, therefore whichever calculation resulted in a greater trip generation was applied as a conservative measure.

Consistent with other traffic studies completed in the areas, an 18% total mode split has been assumed for the study area. The ITE trip rates have a 5% non-auto mode split built into its rates, and as a result a 13% reduction was applied to all residential inbound and outbound site generated traffic during both peak hours from the calculated site trips estimated by the ITE trip rates.

Table 2 summarizes the estimated trip generation for the subject site. The trip generation was completed separately for the west block and the east block.

Table 2 Total Site Trip Generation

Unit Type (LUC)	Unit Count	Parameters	Peak Hour Trip Generation					
			Weekday AM			Weekday PM		
			In	Out	Total	In	Out	Total
Single Family Detached (LUC 210)	382	Gross Trips	67	200	267	226	133	359
		Modal Split Reduction	-9	-26	-35	-29	-17	-46
		New Trips	58	174	232	197	116	313
Single Family Attached (LUC 215)	174	Gross Trips	21	64	85	59	41	100
		Modal Split Reduction	-3	-8	-11	-8	-5	-13
		New Trips	18	56	74	51	36	87
Total New Primary Trips			76	230	306	248	152	400

The proposed development is expected to generate a total of 306 two-way vehicle trips during the a.m. peak hour consisting of 76 inbound and 230 outbound trips. During the p.m. peak hour, it is expected to generate 400 new two-way vehicle trips consisting of 248 inbound and 152 outbound trips.

5.2 Site Traffic Distribution and Assignment

The site generated traffic for the subject site was distributed based on a review of the existing travel patterns and is generally consistent with the distribution established in the Traffic Impact Studies prepared for adjacent developments.

The directional distribution is provided in **Table 3**. The total site trips for the proposed development is summarized in **Figure 13**.

Table 3 Site Traffic Distribution

Peak Period	Direction	North (Trafalgar)	North (Ninth Line)	South (Trafalgar)	South (Ninth Line)	South (Through Joshua Creek Phase 3)	East (Burnhamt horpe)	West (Burnhamt horpe)
AM	Inbound	7.5%	17.5%	10%	5%	10%	20%	30%
	Outbound	7.5%	17.5%	10%	5%	10%	20%	30%
PM	Inbound	7.5%	17.5%	10%	5%	10%	20%	30%
	Outbound	7.5%	17.5%	10%	5%	10%	20%	30%

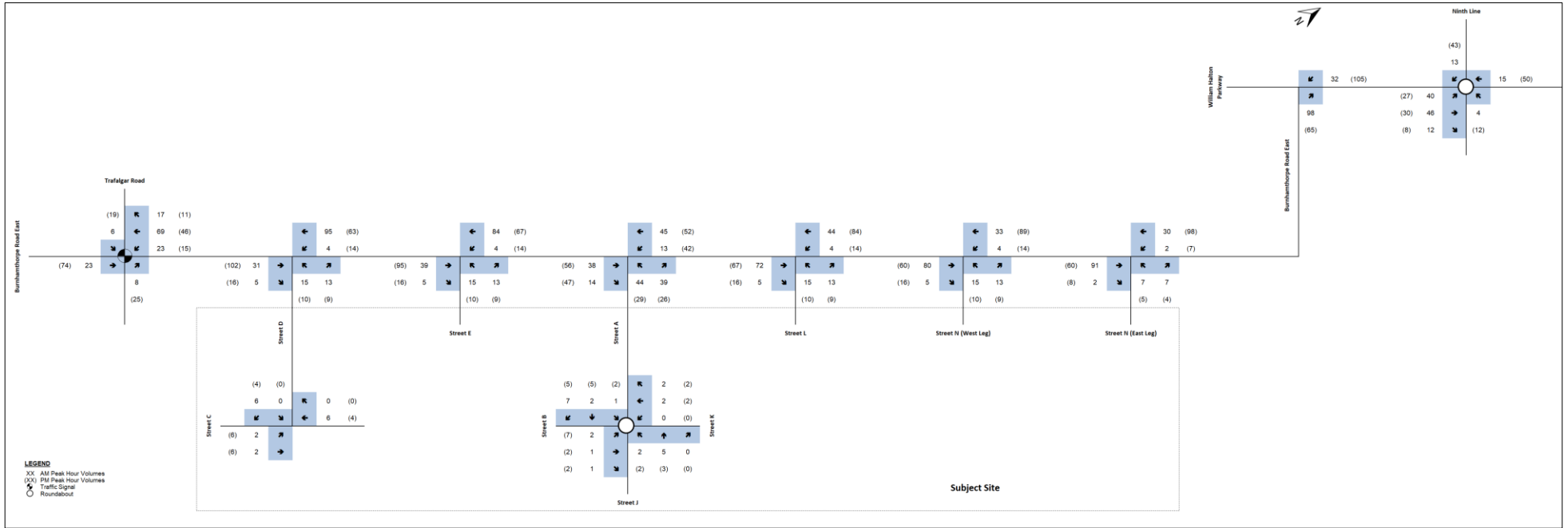


Figure 13 Total Site Trips

6. Future Total Traffic

The future total traffic conditions in the weekday a.m. and p.m. peak hours for the 2031 and 2036 planning horizon were derived by combining the projected future background traffic with the corresponding estimated site generated traffic in addition to the traffic redistribution. The resulting traffic volumes are presented in **Figure 14** for the 2031 horizon year and **Figure 15** for the 2036 horizon year.

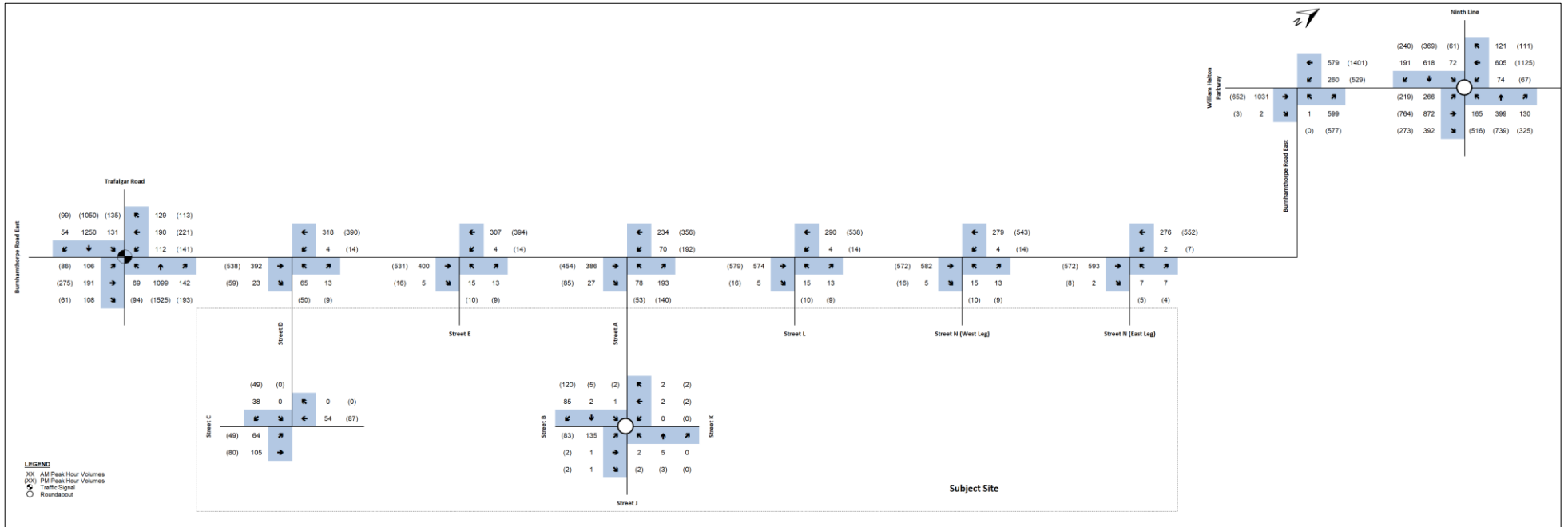


Figure 14 2031 Future Total Traffic Volumes

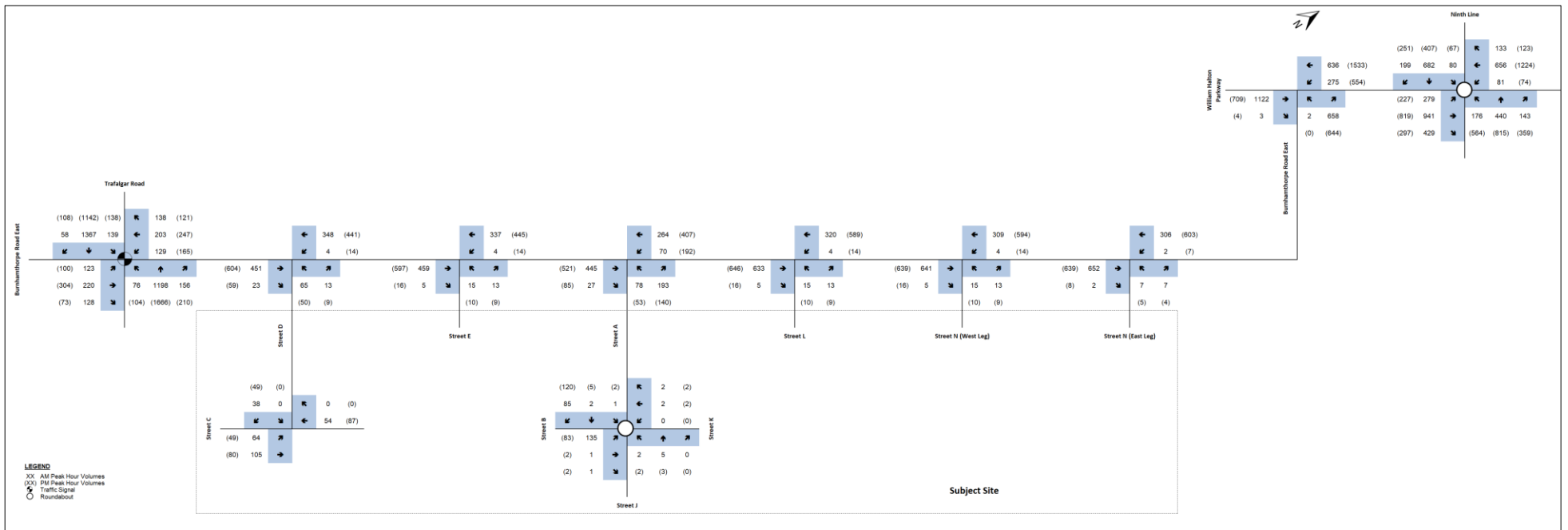


Figure 15 2036 Future Total Traffic Volumes

7. Capacity Analysis

The capacity analysis identifies how well the intersections and driveways are operating. The analysis contained within this report utilized the Highway Capacity Manual (HCM) 2000 procedure within the Synchro Version 11 Software package. The reported intersection volume-to-capacity ratios (v/c) are a measure of the saturation volume for each turning movement, while the levels-of-service (LOS) are a measure of the average delay for each turning movement. Queuing characteristics are reported as the predicted 95th percentile queue for each turning movement. Both pedestrian crossing volumes and heavy vehicle proportions are included in the analyses. The peak hour factors from the counts were used to analyze existing and future traffic conditions.

The analysis includes identification and required modifications and improvements (if any) at intersections where the addition of background growth or background growth plus site-generated traffic volumes causes the following:

'Critical' intersections and movements for a signalized intersection include:

- V/C ratios for overall intersections operations increase to 0.85 or above;
- V/C ratios for individual movements increase to 0.95 or above; or
- 95th percentile queue length for individual movements that are projected to, or exceed, the storage length.

'Critical' intersections and movements for an unsignalized intersection include:

- Level of Services (LOS), based on average delay per vehicle, on individual movements exceeds LOS "D",
- Queue length for individual movements exceed the available queue storage.

The following tables summarize the HCM capacity results for the study intersections during the weekday a.m. and p.m. peak hours under existing (2024), future background (2031 and 2036) and future total (2031 and 2036) traffic conditions. The detailed calculation sheets are provided in **Appendix E**.

7.1 Trafalgar Road and Burnhamthorpe Road East

Capacity analysis at this intersection during the weekday a.m. and p.m. peak hours for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 4 Capacity analysis of Trafalgar Road and Burnhamthorpe Road East

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Existing 2024	<u>Overall: 0.58 (B) 13</u>	EBL = 25 m	<u>Overall: 0.63 (B) 14</u>	EBL = 25 m
	EBL = 0.28 (C) 23	EBTR = 50 m	EBL = 0.27 (C) 30	EBTR = 50 m
	EBTR = 0.51 (C) 25	WBL = 25 m	EBTR = 0.51 (C) 32	WBL = 35 m
	WBL = 0.33 (C) 24	WBTR = 25 m	WBL = 0.52 (C) 33	WBTR = 45 m
	WBTR = 0.21 (C) 22	NBL = 15 m	WBTR = 0.42 (C) 31	NBL = 20 m
	NBL = 0.27 (B) 12	NBTR = 75 m	NBL = 0.25 (A) 9	NBTR = 125 m
	NBTR = 0.6 (B) 14	SBL = 10 m	NBTR = 0.68 (B) 13	SBL = 5 m
	SBL = 0.21 (A) 7	SBTR = 60 m	SBL = 0.16 (A) 8	SBTR = 50 m
	SBTR = 0.51 (A) 8		SBTR = 0.38 (A) 6	

Future Background 2031	<u>Overall: 0.62 (B) 15</u> EBL = 0.41 (C) 28 EBTR = 0.65 (C) 32 WBL = 0.56 (C) 32 WBTR = 0.32 (C) 27 NBL = 0.53 (C) 21 NBTR = 0.61 (B) 16 SBL = 0.4 (A) 9 SBTR = 0.49 (A) 8	EBL = 35 m EBTR = 65 m WBL = 30 m WBTR = 35 m NBL = 30 m NBTR = 95 m SBL = 15 m SBTR = 70 m	<u>Overall: 0.7 (B) 18</u> EBL = 0.54 (D) 39 EBTR = 0.6 (D) 39 WBL = 0.79 (E) 59 WBTR = 0.58 (D) 38 NBL = 0.49 (B) 16 NBTR = 0.69 (B) 16 SBL = 0.47 (B) 13 SBTR = 0.4 (A) 7	EBL = 35 m EBTR = 65 m WBL = 50 m WBTR = 65 m NBL = 40 m NBTR = 160 m SBL = 20 m SBTR = 65 m
Future Total 2031	<u>Overall: 0.66 (B) 20</u> EBL = 0.69 (D) 42 EBTR = 0.66 (C) 33 WBL = 0.67 (D) 39 WBTR = 0.72 (D) 36 NBL = 0.55 (C) 25 NBTR = 0.64 (B) 19 SBL = 0.49 (B) 12 SBTR = 0.51 (A) 10	EBL = 40 m EBTR = 80 m WBL = 40 m WBTR = 85 m NBL = 35 m NBTR = 115 m SBL = 25 m SBTR = 85 m	<u>Overall: 0.84 (C) 28</u> EBL = 0.61 (D) 45 EBTR = 0.7 (D) 43 WBL = 0.97 (F) 107 WBTR = 0.69 (D) 42 NBL = 0.56 (C) 26 NBTR = 0.79 (C) 26 SBL = 0.67 (C) 33 SBTR = 0.44 (B) 12	EBL = 45 m EBTR = 110 m WBL = 80 m WBTR = 105 m NBL = 40 m NBTR = 165 m SBL = 40 m SBTR = 65 m
Future Background 2036	<u>Overall: 0.73 (C) 28</u> EBL = 0.37 (C) 31 EBTR = 0.81 (D) 54 WBL = 0.48 (C) 32 WBTR = 0.41 (D) 38 NBL = 0.55 (C) 22 NBTR = 0.72 (C) 26 SBL = 0.58 (C) 21 SBTR = 0.71 (C) 24	EBL = 35 m EBTR = 95 m WBL = 30 m WBTR = 50 m NBL = 20 m NBTR = 135 m SBL = 35 m SBTR = 145 m	<u>Overall: 0.8 (C) 23</u> EBL = 0.61 (D) 42 EBTR = 0.63 (D) 40 WBL = 0.89 (E) 76 WBTR = 0.6 (D) 39 NBL = 0.42 (B) 10 NBTR = 0.75 (B) 18 SBL = 0.55 (B) 19 SBTR = 0.55 (B) 16	EBL = 40 m EBTR = 75 m WBL = 60 m WBTR = 70 m NBL = 20 m NBTR = 190 m SBL = 25 m SBTR = 120 m
Future Total 2036	<u>Overall: 0.78 (C) 33</u> EBL = 0.58 (D) 35 EBTR = 0.86 (E) 58 WBL = 0.62 (D) 36 WBTR = 0.84 (E) 56 NBL = 0.56 (C) 24 NBTR = 0.74 (C) 28 SBL = 0.68 (C) 28 SBTR = 0.73 (C) 26	EBL = 35 m EBTR = 120 m WBL = 40 m WBTR = 115 m NBL = 20 m NBTR = 140 m SBL = 45 m SBTR = 145 m	<u>Overall: 0.93 (C) 34</u> EBL = 0.6 (D) 41 EBTR = 0.68 (D) 39 WBL = 0.97 (F) 99 WBTR = 0.66 (D) 39 NBL = 0.49 (B) 17 NBTR = 0.88 (C) 31 SBL = 0.88 (E) 65 SBTR = 0.63 (C) 24	EBL = 45 m EBTR = 115 m WBL = 85 m WBTR = 110 m NBL = 20 m NBTR = 195 m SBL = 60 m SBTR = 120 m

Under existing traffic conditions, the signalized intersection of Trafalgar Road and Burnhamthorpe Road East is operating at satisfactory levels with an overall v/c ratio of 0.58 LOS B during the a.m. peak hour and 0.63 LOS B during the p.m. peak hour. The intersection does not currently operate with a critical movement.

With the addition of corridor growth, background development traffic, and signal improvements to mitigate delays for the 2031 future background traffic scenario, the overall reported v/c of the intersection is expected to increase to 0.62 LOS B during the a.m. peak hour and 0.70 LOS B during the p.m. peak hour. The intersection continues to operate without any critical movements during both peak hours.

Under the 2031 future total traffic scenario, with redistribution of background development traffic and the addition of site generated traffic from the proposed development, the overall v/c ratio is reported to increase to 0.66 LOS B during the a.m. peak hour and 0.84 LOS C during the p.m. peak hour. The intersection continues to operate without any critical movements during the a.m. peak hour while the westbound left-turn lane operates at critical levels during the p.m. peak hour.

With the addition of corridor growth, background development traffic, and signal improvements to mitigate delays for the 2036 future background traffic scenario, the overall reported v/c of the intersection is expected to increase to 0.73 LOS C during the a.m. peak hour and 0.80 LOS C during the p.m. peak hour. The intersection continues to operate without any critical movements during both peak hours.

Under the 2036 future total traffic scenario, with redistribution of background development traffic and the addition of site generated traffic from the proposed development, the overall v/c ratio is reported to increase to 0.78 LOS C during the a.m. peak hour and 0.93 LOS C during the p.m. peak hour. The overall intersection operates at a critical level during the p.m. peak hour in addition to the eastbound shared through/right-turn lane during the a.m. peak hour and the westbound left-turn lane during the p.m. peak hour. All movements are reported to operate below capacity.

There are no geometric improvements recommended for the intersection as a result of the proposed development.

7.2 William Halton Parkway and Burnhamthorpe Road East

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the existing, future background, and future total traffic conditions are summarized in the following table.

Table 5 Capacity analysis of William Halton Parkway and Burnhamthorpe East

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Existing 2024	EBTR = 0.49 (A) 0 WBTL = 0.17 (A) 4 NBLR = 0.75 (E) 39	EBTR = 0 m WBTL = 5 m NBLR = 45 m	EBTR = 0.29 (A) 0 WBTL = 0.2 (A) 6 NBLR = 0.49 (C) 17	EBTR = 0 m WBTL = 5 m NBLR = 20 m
Future Background 2031	EBTR = 0.67 () 0 WBTL = 0.31 () 8 NBLR = 1.57 (F) 310	EBTR = 0 m WBTL = 10 m NBLR = 180 m	EBTR = 0.4 () 0 WBTL = 0.3 () 11 NBLR = 0.9 (F) 51	EBTR = 0 m WBTL = 10 m NBLR = 75 m
Future Total 2031	EBTR = 0.67 () 0 WBTL = 0.47 () 13 NBLR = 2.71 (F) 811	EBTR = 0 m WBTL = 20 m NBLR = 430 m	EBTR = 0.4 () 0 WBTL = 0.59 () 14 NBLR = 1.3 (F) 177	EBTR = 0 m WBTL = 30 m NBLR = 200 m
Future Background 2031 (WHP Widening)	EBT = 0.44 () 0 EBTR = 0.22 () 0 WBTL = 0.32 () 9 WBT = 0.25 () 0 NBLR = 0.84 (E) 42	EBT = 0 m EBTR = 0 m WBTL = 10 m WBT = 0 m NBLR = 65 m	EBT = 0.26 () 0 EBTR = 0.13 () 0 WBTL = 0.3 () 7 WBT = 0.57 () 0 NBLR = 0.62 (C) 19	EBT = 0 m EBTR = 0 m WBTL = 10 m WBT = 0 m NBLR = 35 m
Future Total 2031 (WHP Widening)	EBT = 0.44 () 0 EBTR = 0.22 () 0 WBTL = 0.48 () 13 WBT = 0.25 () 0 NBLR = 1.45 (F) 236	EBT = 0 m EBTR = 0 m WBTL = 20 m WBT = 0 m NBLR = 250 m	EBT = 0.26 () 0 EBTR = 0.13 () 0 WBTL = 0.59 () 13 WBT = 0.57 () 0 NBLR = 0.9 (E) 40	EBT = 0 m EBTR = 0 m WBTL = 30 m WBT = 0 m NBLR = 90 m
Future Background 2031 (Widening and Signalization)	<u>Overall: 0.55 (B) 11</u> EBTR = 0.65 (B) 13 WBL = 0.47 (A) 7 WBT = 0.26 (A) 3 NBLR = 0.3 (C) 24	EBTR = 90 m WBL = 25 m WBT = 25 m NBLR = 30 m	<u>Overall: 0.63 (A) 8</u> EBTR = 0.57 (B) 12 WBL = 0.46 (A) 4 WBT = 0.61 (A) 5 NBLR = 0.25 (B) 17	EBTR = 40 m WBL = 15 m WBT = 35 m NBLR = 0 m

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031 (Widening and Signalization)	<u>Overall: 0.81 (C) 28</u> EBTR = 0.8 (C) 29 WBL = 0.76 (C) 32 WBT = 0.3 (A) 9 NBLR = 0.83 (D) 43	EBTR = 160 m WBL = 85 m WBT = 50 m NBLR = 120 m	<u>Overall: 0.68 (B) 12</u> EBTR = 0.61 (B) 19 WBL = 0.69 (B) 10 WBT = 0.55 (A) 4 NBLR = 0.36 (C) 26	EBTR = 80 m WBL = 85 m WBT = 75 m NBLR = 20 m
Future Background 2036	EBTR = 0.73 () 0 WBTL = 0.37 () 11 NBLR = 2.1 (F) 548	EBTR = 0 m WBTL = 15 m NBLR = 260 m	EBTR = 0.43 () 0 WBTL = 0.35 () 11 NBLR = 1.13 (F) 115	EBTR = 0 m WBTL = 15 m NBLR = 135 m
Future Total 2036	EBTR = 0.73 () 0 WBTL = 0.54 () 18 NBLR = 3.42 (F) 9999	EBTR = 0 m WBTL = 25 m NBLR = Err	EBTR = 0.43 () 0 WBTL = 0.65 () 16 NBLR = 1.57 (F) 290	EBTR = 0 m WBTL = 40 m NBLR = 280 m
Future Background 2036 (WHP Widening)	EBT = 0.48 () 0 EBTR = 0.24 () 0 WBTL = 0.37 () 11 WBT = 0.27 () 0 NBLR = 1.06 (F) 92	EBT = 0 m EBTR = 0 m WBTL = 15 m WBT = 0 m NBLR = 110 m	EBT = 0.29 () 0 EBTR = 0.14 () 0 WBTL = 0.35 () 8 WBT = 0.62 () 0 NBLR = 0.75 (D) 26	EBT = 0 m EBTR = 0 m WBTL = 15 m WBT = 0 m NBLR = 55 m
Future Total 2036 (WHP Widening)	EBT = 0.48 () 0 EBTR = 0.24 () 0 WBTL = 0.56 () 16 WBT = 0.27 () 0 NBLR = 1.72 (F) 359	EBT = 0 m EBTR = 0 m WBTL = 25 m WBT = 0 m NBLR = 335 m	EBT = 0.29 () 0 EBTR = 0.14 () 0 WBTL = 0.65 () 16 WBT = 0.62 () 0 NBLR = 1.05 (F) 74	EBT = 0 m EBTR = 0 m WBTL = 40 m WBT = 0 m NBLR = 135 m
Future Background 2036 (Widening and Signalization)	<u>Overall: 0.65 (B) 15</u> EBTR = 0.7 (B) 16 WBL = 0.56 (B) 12 WBT = 0.28 (A) 4 NBLR = 0.6 (C) 31	EBTR = 135 m WBL = 40 m WBT = 35 m NBLR = 55 m	<u>Overall: 0.66 (A) 9</u> EBTR = 0.58 (B) 13 WBL = 0.49 (A) 5 WBT = 0.63 (A) 4 NBLR = 0.29 (B) 20	EBTR = 45 m WBL = 15 m WBT = 40 m NBLR = 5 m
Future Total 2036 (Widening and Signalization)	<u>Overall: 0.91 (D) 39</u> EBTR = 0.9 (D) 41 WBL = 0.88 (D) 53 WBT = 0.34 (B) 12 NBLR = 0.91 (D) 54	EBTR = 195 m WBL = 105 m WBT = 60 m NBLR = 175 m	<u>Overall: 0.72 (B) 15</u> EBTR = 0.65 (C) 23 WBL = 0.73 (B) 16 WBT = 0.6 (A) 5 NBLR = 0.49 (C) 30	EBTR = 100 m WBL = 120 m WBT = 120 m NBLR = 40 m

Under existing traffic conditions, the unsignalized intersection of William Halton Parkway and Burnhamthorpe Road East is operating at satisfactory levels with the greatest delay occurring in the northbound approach with a 39 second delay during the a.m. peak hour and 17 second delay during the p.m. peak hour.

With the addition of corridor growth and background development traffic for the 2031 future background traffic scenario, the intersection operates at critical levels with the northbound approach operating with a 310 second delay during the a.m. peak hour and 51 second delay during the p.m. peak hour.

Under the 2031 future total traffic scenario, with redistribution of background development traffic and the addition of site generated traffic from the proposed development, the intersection continues to operate at critical levels with the delay in the northbound approach reported at 811 seconds during the a.m. peak hour and a 177 second delay during the p.m. peak hour.

William Halton Parkway is anticipated to be widened to a 4-lane cross-section with the timeline currently unknown. With the widening along William Halton Parkway, the reported delays are reported to decrease, however the

intersection continues to operate above capacity under the future total scenario. The northbound approach is reported to operate with a 42 and 19 second delay during the a.m. and p.m. peak hour respectively under the 2031 future background scenario. Under the 2031 future total scenario, the delay is reported to increase to 236 seconds during the a.m. Peak hour and 40 second delay during the p.m. peak hour

In order to further mitigate some of the delays, GHD completed an analysis of the intersection as a signalized intersection. With the signalization of William Halton Parkway and Burnhamthorpe Road East, the intersection operates with an overall v/c ratio of 0.55 LOS B during the a.m. peak hour and 0.63 LOS A during the p.m. peak hour under the 2031 future background condition. Under future total 2031 condition, the overall v/c ratio is reported to increase to 0.81 LOS C during the a.m. peak hour and 0.68 LOS B during the p.m. peak hour with all movements reported to operate below capacity.

With the addition of corridor growth and background development traffic for the 2036 future background traffic scenario, the intersection operates at critical levels with the northbound approach operating with a 548 second delay during the a.m. peak hour and 115 second delay during the p.m. peak hour.

Under the 2036 future total traffic scenario, with redistribution of background development traffic and the addition of site generated traffic from the proposed development, the intersection continues to operate at critical levels with the delay in the northbound approach exceeding the software’s capabilities during the a.m. peak hour and a 290 second delay during the p.m. peak hour.

Similarly to the 2031 horizon year, GHD assessed the operation of the intersection with a widening along William Halton Parkway and signalization of the intersections. With the signalization of William Halton Parkway and Burnhamthorpe Road East, the intersection is reported to operate with an overall v/c ratio of 0.65 LOS B during the a.m. peak hour and 0.66 LOS A during the p.m. peak hour under the 2036 future background condition. Under future total 2031 condition, the overall v/c ratio is reported to increase to 0.91 LOS D during the a.m. peak hour and 0.72 LOS B during the p.m. peak hour.

With the assumed William Halton Parkway widening to a 4-lane cross-section and the signalization of the intersection under the 2036 horizon year, the intersection is reported to operate with some critical movements, however the delays and queuing have been minimized in comparison to the scenarios with the existing lane configurations and traffic controls. The Region should continue to monitor the operation of the intersection to determine when a widening and/or signalization of the intersection would be warranted.

A signal warrant was completed for the intersection under the Future Background 2031 condition and confirms that a signalized intersection is warranted based on Justification 1. The signal warrant is provided in **Appendix F**.

7.3 William Halton Parkway/Burnhamthorpe Road East and Ninth Line

Table 6 Capacity analysis of William Halton Parkway/Burnhamthorpe Road East and Ninth Line

Traffic Condition	Location	AM Peak Hour			PM Peak Hour		
		V/C Ratio	LOS	95 th % Que (veh)	V/C Ratio	LOS	95 th % Que (veh)
Existing 2024 (15% y-intercept)	NB Ninth Line	0.36	A	3	0.77	A	9
	WB Burnhamthorpe Road West	0.34	A	2	0.72	A	6
	SB Ninth Line	0.45	A	2	0.45	A	3

Traffic Condition	Location	AM Peak Hour			PM Peak Hour		
		V/C Ratio	LOS	95 th % Que (veh)	V/C Ratio	LOS	95 th % Que (veh)
	EB William Halton Parkway	0.67	A	3	0.44	A	2
Existing 2024 (0% y-intercept)	NB Ninth Line	0.29	A	1	0.63	A	3
	WB Burnhamthorpe Road West	0.28	A	2	0.56	A	1
	SB Ninth Line	0.37	A	3	0.34	A	2
	EB William Halton Parkway	0.54	A	1	0.37	A	3
Future Background 2031 (15% y-intercept)	NB Ninth Line	0.50	A	2	1.03	F	121
	WB Burnhamthorpe Road West	0.47	A	2	0.98	F	80
	SB Ninth Line	0.63	A	2	0.65	B	5
	EB William Halton Parkway	0.89	C	37	0.67	A	3
Future Background 2031 (0% y-intercept)	NB Ninth Line	0.39	A	3	0.82	A	20
	WB Burnhamthorpe Road West	0.38	A	3	0.76	A	9
	SB Ninth Line	0.50	A	2	0.47	A	3
	EB William Halton Parkway	0.72	A	5	0.55	A	2
Future Total 2031 (15% y-intercept)	NB Ninth Line	0.55	A	2	1.14	F	186
	WB Burnhamthorpe Road West	0.52	A	2	1.07	F	125
	SB Ninth Line	0.68	A	3	0.81	C	19
	EB William Halton Parkway	1.06	F	135	0.78	A	12
Future Total 2031 (0% y-intercept)	NB Ninth Line	0.44	A	3	0.89	C	39
	WB Burnhamthorpe Road West	0.42	A	3	0.88	C	32
	SB Ninth Line	0.54	A	2	0.63	A	4

Traffic Condition	Location	AM Peak Hour			PM Peak Hour		
		V/C Ratio	LOS	95 th % Que (veh)	V/C Ratio	LOS	95 th % Que (veh)
	EB William Halton Parkway	0.86	B	29	0.64	A	3
Future Background 2036 (15% y-intercept)	NB Ninth Line	0.56	A	2	1.18	F	200
	WB Burnhamthorpe Road West	0.52	A	2	1.06	F	119
	SB Ninth Line	0.71	A	6	0.73	A	10
	EB William Halton Parkway	1.01	F	103	0.74	A	7
Future Background 2036 (0% y-intercept)	NB Ninth Line	0.45	A	3	0.93	C	65
	WB Burnhamthorpe Road West	0.42	A	3	0.89	C	36
	SB Ninth Line	0.56	A	1	0.57	A	3
	EB William Halton Parkway	0.81	A	17	0.61	A	2
Future Total 2036 (15% y-intercept)	NB Ninth Line	0.59	A	2	1.31	F	236
	WB Burnhamthorpe Road West	0.57	A	2	1.15	F	192
	SB Ninth Line	0.77	B	13	0.88	D	34
	EB William Halton Parkway	1.19	F	200	0.85	B	27
Future Total 2036 (0% y-intercept)	NB Ninth Line	0.50	A	2	1.01	F	117
	WB Burnhamthorpe Road West	0.46	A	2	1.01	F	99
	SB Ninth Line	0.60	A	2	0.73	B	8
	EB William Halton Parkway	0.95	D	79	0.70	A	5

Under existing conditions, the roundabout is reported to operate satisfactorily using both a 15% y-intercept and 0% y-intercept. The 15% y-intercept takes into consideration the unfamiliarity that some drivers may have with the operation of roundabouts whereas a 0% y-intercept represents residents becoming more accustomed to using roundabouts within the Region.

Under the 2031 future background traffic scenario, the roundabout is reported to operate at a satisfactory level using a 15% y-intercept while using a 0% y-intercept results in the northbound and westbound approaches during the p.m. peak hour reported to operate at capacity.

With the redistribution of background development traffic and the addition of site generated traffic under the 2031 future total traffic condition, the roundabout is reported to operate at mostly satisfactory levels using the 0% y-intercept while the northbound and westbound approaches continue to operate above capacity during the p.m. peak hour using the 15% y-intercept.

Under the 2036 future background traffic scenario, the roundabout is reported to operate at a satisfactory level using a 15% y-intercept while using a 0% y-intercept results in the eastbound approach during the a.m. peak hour and the northbound and westbound approaches during the p.m. peak hour reported to operate at capacity.

With the redistribution of background development traffic and the addition of site generated traffic under the 2036 future total traffic condition, the roundabout is reported to continue to operate at mostly satisfactory levels. With a 15% y-intercept, the eastbound approach during the a.m. peak hour and northbound and westbound approaches continue to operate above capacity during the p.m. peak hour. When modeling the intersection with a 0% y-intercept, the northbound and westbound approaches are reported to operate at capacity with both movements operating with v./c ratios of 1.01 LOS F.

7.4 Burnhamthorpe Road East and Street A

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 7 Capacity analysis of Burnhamthorpe Road East and Street A

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031	EBTR = 0.28 (A) 0 WBTL = 0.16 (A) 5 NBL = 0.51 (C) 38 NBR = 0.48 (A) 16	EBTR = 0 m WBTL = 5 m NBL = 20 m NBR = 20 m	EBTR = 0.35 (A) 0 WBTL = 0.23 (A) 5 NBL = 0.5 (D) 60 NBR = 0.32 (A) 15	EBTR = 0 m WBTL = 10 m NBL = 20 m NBR = 10 m
Future Total 2036	EBTR = 0.32 (A) 0 WBTL = 0.17 (A) 5 NBL = 0.59 (D) 49 NBR = 0.52 (A) 18	EBTR = 0 m WBTL = 5 m NBL = 25 m NBR = 25 m	EBTR = 0.39 (A) 0 WBTL = 0.24 (A) 6 NBL = 0.61 (D) 85 NBR = 0.35 (A) 16	EBTR = 0 m WBTL = 10 m NBL = 25 m NBR = 15 m

Under future total 2031 and 2036 conditions, the proposed unsignalized intersection of Street A and Burnhamthorpe Road East is reported to operate at satisfactory levels with a maximum delay of 85 seconds reported during the p.m. peak hour under the 2036 future total scenario while the delays along Burnhamthorpe Road East do not exceed 6 seconds.

7.5 Burnhamthorpe Road East and Street D

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 8 Capacity analysis of Burnhamthorpe Road East and Street D

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031	EBTR = 0.3 (A) 0 WBTL = 0 (A) 0 NBLR = 0.3 (C) 20	EBTR = 0 m WBTL = 5 m NBLR = 10 m	EBTR = 0.39 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.27 (C) 24	EBTR = 0 m WBTL = 5 m NBLR = 10 m
Future Total 2036	EBTR = 0.33 (A) 0 WBTL = 0 (A) 0 NBLR = 0.35 (C) 23	EBTR = 0 m WBTL = 5 m NBLR = 15 m	EBTR = 0.43 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.32 (D) 29	EBTR = 0 m WBTL = 5 m NBLR = 10 m

Under future total 2031 and 2036 conditions, the proposed unsignalized intersection of Street D and Burnhamthorpe Road East is reported to operate at satisfactory levels with a maximum delay of 29 seconds reported during the p.m. peak hour under the 2036 future total scenario while no delays are reported along Burnhamthorpe Road East.

7.6 Burnhamthorpe Road East and Street E

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 9 Capacity analysis of Burnhamthorpe Road East and Street E

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031	EBTR = 0.27 (A) 0 WBTL = 0 (A) 0 NBLR = 0.07 (B) 14	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.35 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.06 (C) 17	EBTR = 0 m WBTL = 5 m NBLR = 5 m
Future Total 2036	EBTR = 0.31 (A) 0 WBTL = 0 (A) 0 NBLR = 0.08 (C) 15	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.39 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.07 (C) 19	EBTR = 0 m WBTL = 5 m NBLR = 5 m

Under future total 2031 and 2036 conditions, the proposed unsignalized intersection of Street E and Burnhamthorpe Road East is reported to operate at satisfactory levels with a maximum delay of 19 seconds reported during the p.m. peak hour under the 2036 future total scenario while no delays are reported along Burnhamthorpe Road East.

7.7 Burnhamthorpe Road East and Street L

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 10 Capacity analysis of Burnhamthorpe Road East and Street L

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031	EBTR = 0.42 (A) 0 WBTL = 0 (A) 0 NBLR = 0.1 (C) 19	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.39 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.08 (C) 20	EBTR = 0 m WBTL = 5 m NBLR = 5 m
Future Total 2036	EBTR = 0.46 (A) 0 WBTL = 0 (A) 0 NBLR = 0.12 (C) 21	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.44 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.1 (C) 23	EBTR = 0 m WBTL = 5 m NBLR = 5 m

Under future total 2031 and 2036 conditions, the proposed unsignalized intersection of Street L and Burnhamthorpe Road East is reported to operate at satisfactory levels with a maximum delay of 23 seconds reported during the p.m. peak hour under the 2036 future total scenario while no delays are reported along Burnhamthorpe Road East.

7.8 Burnhamthorpe Road East and Street N (West Leg)

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 11 Capacity analysis of Burnhamthorpe Road East and Street N (West Leg)

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031	EBTR = 0.42 (A) 0 WBTL = 0 (A) 0 NBLR = 0.1 (C) 19	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.39 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.08 (C) 20	EBTR = 0 m WBTL = 5 m NBLR = 5 m
Future Total 2036	EBTR = 0.46 (A) 0 WBTL = 0 (A) 0 NBLR = 0.12 (C) 21	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.43 (A) 0 WBTL = 0.02 (A) 0 NBLR = 0.1 (C) 23	EBTR = 0 m WBTL = 5 m NBLR = 5 m

Under future total 2031 and 2036 conditions, the proposed unsignalized intersection of the west leg of Street N with Burnhamthorpe Road East is reported to operate at satisfactory levels with a maximum delay of 23 seconds reported during the p.m. peak hour under the 2036 future total scenario while no delays are reported along Burnhamthorpe Road East.

7.9 Burnhamthorpe Road East and Street N (East Leg)

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 12 Capacity analysis of Burnhamthorpe Road East and Street N (East Leg)

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031	EBTR = 0.43 (A) 0 WBTL = 0 (A) 0 NBLR = 0.05 (C) 18	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.38 (A) 0 WBTL = 0.01 (A) 0 NBLR = 0.04 (C) 20	EBTR = 0 m WBTL = 5 m NBLR = 5 m
Future Total 2036	EBTR = 0.47 (A) 0 WBTL = 0 (A) 0 NBLR = 0.06 (C) 20	EBTR = 0 m WBTL = 5 m NBLR = 5 m	EBTR = 0.43 (A) 0 WBTL = 0.01 (A) 0 NBLR = 0.04 (C) 22	EBTR = 0 m WBTL = 5 m NBLR = 5 m

Under future total 2031 and 2036 conditions, the proposed unsignalized intersection of the east leg of Street N with Burnhamthorpe Road East is reported to operate at satisfactory levels with a maximum delay of 20 seconds reported during the p.m. peak hour under the 2036 future total scenario while no delays are reported along Burnhamthorpe Road East.

7.10 Street A/J and Street B/K

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 13 Capacity analysis of Street A/J and Street B/K

Traffic Condition	Location	AM Peak Hour			PM Peak Hour		
		V/C Ratio	LOS	95 th % Que (veh)	V/C Ratio	LOS	95 th % Que (veh)
Future Total 2031 (15% y-intercept)	NB Street J	0.01	A	1	0.01	A	1
	WB Street K	0.00	A	1	0.00	A	1
	SB Street A	0.06	A	1	0.08	A	1
	EB Street B	0.11	A	1	0.07	A	1
Future Total 2031 (0% y-intercept)	NB Street J	0.01	A	1	0.00	A	1
	WB Street K	0.00	A	1	0.00	A	1
	SB Street A	0.05	A	1	0.07	A	1
	EB Street B	0.10	A	1	0.06	A	1
Future Total 2036 (15% y-intercept)	NB Street J	0.01	A	1	0.01	A	1
	WB Street K	0.00	A	1	0.00	A	1
	SB Street A	0.06	A	1	0.08	A	1
	EB Street B	0.11	A	1	0.07	A	1
Future Total 2036 (0% y-intercept)	NB Street J	0.01	A	1	0.00	A	1
	WB Street K	0.00	A	1	0.00	A	1
	SB Street A	0.05	A	1	0.07	A	1
	EB Street B	0.10	A	1	0.06	A	1

Under the 2031 and 2036 future total conditions, the proposed roundabout at Streets A/J and Streets B/K are reported to operate at satisfactory levels with low levels of queuing and delays.

7.11 Street C and Street D

Capacity analysis for this intersection during the weekday a.m. and p.m. peak hours for the future total traffic conditions are summarized in the following table.

Table 14 Capacity analysis of Street C and Street D

Scenario	AM Peak Hour		PM Peak Hour	
	V/C (LOS) seconds	95 th % Que.	V/C (LOS) seconds	95 th % Que
Future Total 2031	EBTL = 0.05 (A) 3 WBTR = 0.05 (A) 0 SBLR = 0.05 (A) 9	EBTL = 5 m WBTR = 0 m SBLR = 5 m	EBTL = 0.04 (A) 3 WBTR = 0.06 (A) 0 SBLR = 0.06 (A) 9	EBTL = 5 m WBTR = 0 m SBLR = 5 m
Future Total 2036	EBTL = 0.05 (A) 3 WBTR = 0.05 (A) 0 SBLR = 0.05 (A) 9	EBTL = 5 m WBTR = 0 m SBLR = 5 m	EBTL = 0.04 (A) 3 WBTR = 0.06 (A) 0 SBLR = 0.06 (A) 9	EBTL = 5 m WBTR = 0 m SBLR = 5 m

Under the 2031 and 2036 future total conditions, the proposed unsignalized intersection of Street C and Street D operates at satisfactory levels during both peak hours. The greatest delay is reported to occur in the southbound approach with a 9 second delay during both peak hours.

8. Recommendations

Based on the findings in **Section 7.2**, the Region should continue to monitor the operation of the intersection of William Halton Parkway and Burnhamthorpe Road East and proceed with the following improvements when warranted:

- Advance the widening of William Halton Parkway to a four-lane cross-section within the study area as per the New North Oakville Transportation Corridor and Crossing of Sixteen Mile Creek Class Environmental Assessment Study
- Include a westbound left-turn lane
- Signalize the intersection

An excerpt of the Preferred Design Plan for the intersection from the Class EA is provided in **Figure 16** with the future lane configuration and traffic controls within the study area shown in **Figure 17**.

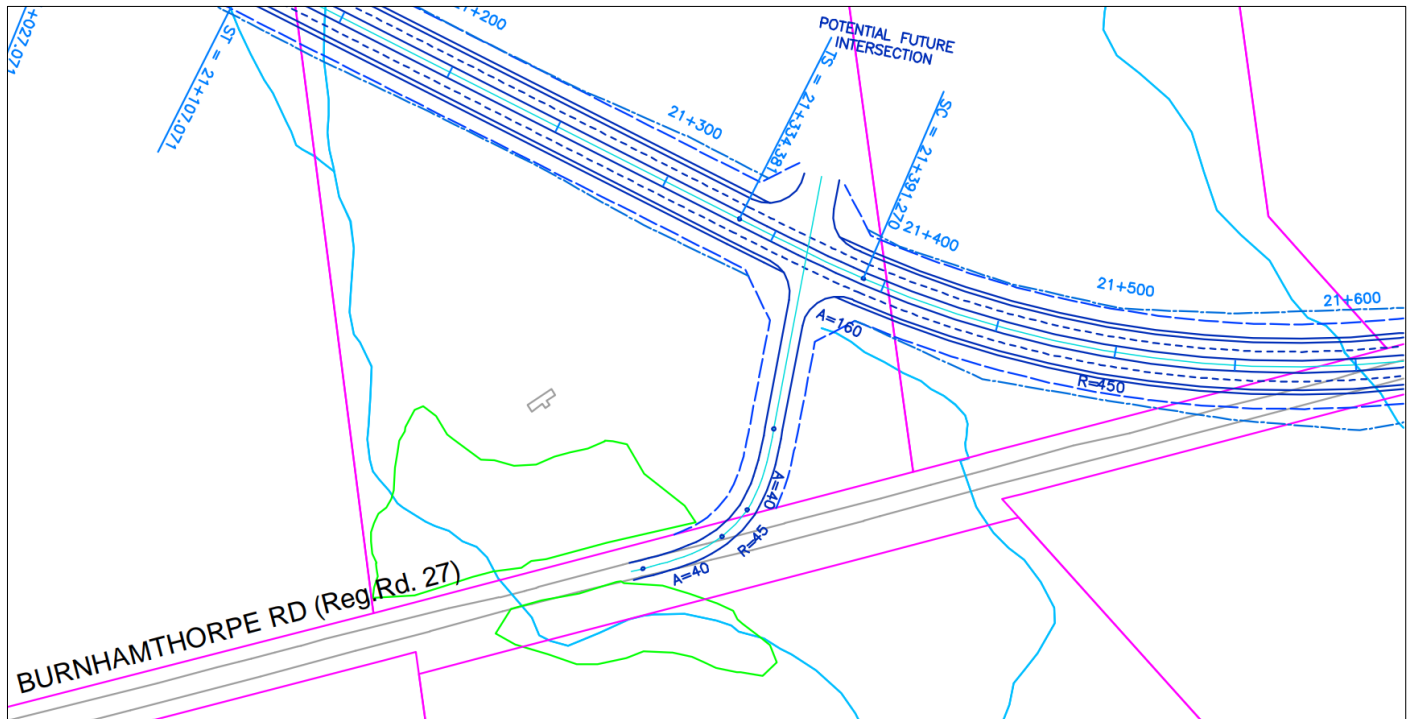


Figure 16 William Halton Parkway and Burnhamthorpe Road Preferred Design (Halton Region's Class EA)

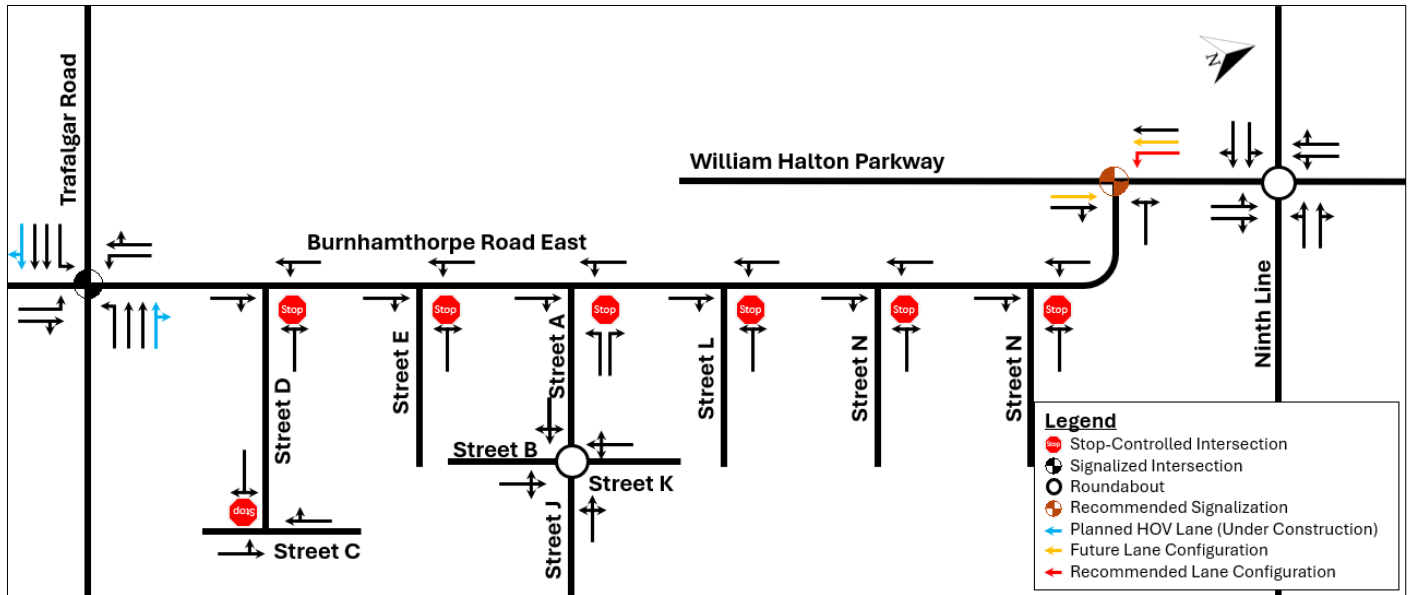


Figure 17 Recommended Future Lane Configurations

9. Parking Review

GHD reviewed the Town's current Zoning By-Law parking requirements for the subject site.

9.1 Town of Oakville Zoning By-Law 2009-189

9.1.1 Vehicular Parking

The current Town of Oakville Zoning By-Law 2009-189 minimum parking requirements for residential developments are found in Section 5.1.7m Table 5.1A. The minimum By-Law requirement for the subject site is as follows:

- Single and Semi-detached dwellings
 - A minimum of 2 parking spaces per dwelling unit
- Townhouse dwellings
 - A minimum of 1 parking space per dwelling unit

The minimum parking required for the subject site is as follows:

- Single and Semi-detached dwellings
 - A minimum of 2 parking spaces per dwelling unit x 382 dwelling units = 764 spaces
- Townhouse dwellings
 - A minimum of 1 parking space per dwelling unit x 174 dwelling units = 174 spaces

In total, the subject site is required to provide a minimum of 938 parking spaces.

9.2 Proposed Site Parking

The subject site proposes to provide a minimum of 2 parking spaces per dwelling unit for single and semi-detached dwelling units consisting of one parking space in the garage and one space in the driveway while the townhouse dwelling units are proposed to contain at least one parking space, which satisfies the Town's By-law requirement.

9.3 On-Street Visitor Parking

The Town’s zoning bylaw does not specify a minimum requirement for visitor parking for residential units; however, the Town has expressed a preference to maximize parking availability. A parking plan, prepared by Korsiak and included in **Appendix G**, identifies a total of 244 on-street parking spaces to address this objective.

The parking plan prepared by Korsiak illustrates a maximum on-street parking scenario and does not consider detailed hydrant, driveway, utility and traffic calming locations. Further refinements to the on-street parking totals are anticipated at detailed design.

10. Travel Demand Management

10.1 Travel Demand Management

Travel Demand Management (TDM) refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. TDM strategies have multiple benefits including the following:

- Reduced auto-related emissions to improve air quality;
- Decreased traffic congestion to reduce travel time;
- Increased travel options for businesses and commuters;
- Reduced personal transportation costs and energy consumptions; and
- Support Provincial smart growth objectives.

The combined benefits listed above will assist in creating a more active and livable community through improvements to overall active transportation standards for the local businesses and surrounding community.

10.2 Recommended TDM Measures

Table 15 Recommended TDM Strategies

TDM Measure	Responsibility	Cost	Note
Hard Measures			
Connected Sidewalks and Pathways	Applicant	Integrated into the overall development cost	Sidewalks and multi-use pathways are designed to provide seamless connections to transit stops, parks, schools, and adjacent neighborhoods.
Transit Accessibility	Applicant/Town	Integrated into the overall development cost	Transit stops are planned within 400–500 meters of all residences.
Traffic Calming Measures	Applicant	Integrated into the overall development cost	Measures such as curb bump-outs are incorporated at key locations with higher pedestrian activity to enhance safety and reduce vehicle speeds.

Soft Measures			
TDM Education Campaigns	Applicant/Town	\$1,500 to \$2,500 depending on scope	Campaigns to educate residents on the benefits of carpooling, cycling, walking, and using transit, distributed through digital platforms or pamphlets.

10.3 Implementation

The hard measures proposed in the TDM plan outlined in this plan will be incorporated into the development design and are illustrated on the site plan. It is understood that the “soft” measures of the TDM plan apart from the unbundled parking will be implemented by the Town of Oakville and the applicant. It will be the responsibility of the applicant to notify the Town of Oakville upon occupation of the proposed development to coordinate for the distribution of information packages and outreach events to discuss the Smart Commute Initiative within Halton Region.

11. Roadway Elements

11.1 Geometric Elements

Right-of-Way

Street A is classified as an Avenue/Transit Corridor within the North Oakville Secondary Plan with a maximum 22-metre right-of-way. Street A is proposed to be designed with a 22-metre right-of-way, satisfying the North Oakville Urban Design Guidelines.

Street B and Street C are also identified as Avenue/Transit corridors with a maximum of 22-metre rights-of-way. Both Street B and Street C are proposed at 22 metre right-of-way with the exception of some short sections which reduce the right-of-way to 19 metres over proposed Natural Heritage System (NHS) crossings. GHD previously prepared a technical memorandum, dated May 2021, in which justification was provided for the proposed design the two NHS crossings (Streets B and C) with a 19-metre right-of-way. The 19-metre right-of-way is consistent with the Town’s Connector/Transit Corridor that are designed to serve relatively low volumes of intra-neighbourhood travel.

All remaining roadways are not identified on the North Oakville Secondary Plan and are considered to be local roads with 17-metre right-of-way which satisfies the North Oakville Urban Design Guidelines

Daylight Triangle

Requirements for daylight triangles are found in Section 2.7, Table 6 of the Terms of Reference for Transportation Impact Studies and Transportation Functional Design Studies, with the requirements based on the road types that are intersection each other. The requirements for all intersecting road types within the study area are as follows:

- Avenue/Connector to Avenue/Connector: 7.5m x 7.5m (The intersection of Street A and Burnhamthorpe Road East)
- Avenue/Connector/Local to Local: 3.5m x 3.5m (All remaining internal intersections)

All intersections within the Joshua Creek North lands will be designed to meet the Town’s requirements.

Corner Clearance

Driveway locations have not been finalized, however all driveways will be designed to be located outside of the daylighting triangles as well as with a corner clearance of at least 2 metres from adjacent intersection curb radii.

11.2 Intersection Spacing

A total of six roadways are proposed to intersect Burnhamthorpe Road East from the proposed Joshua Creek North subdivision with three roads proposed to be located either side of the Natural Heritage Systems and is generally consistent with the road network identified through the Burnhamthorpe Road Study and Class EA.

The recommended location and spacing of intersections are provided in Section 9.4.2 of the TAC manual with the recommendation of 60 metres along collector roadways provided in Section 9.4.2.2. Based on the North Oakville East Transportation Plan, it is assumed that the classification of Burnhamthorpe Road East as an Avenue/Transit Corridor is generally consistent with the classification as a collector roadway.

The following summarizes the spacing between each intersection along Burnhamthorpe Road East, measured from centreline to centreline:

- On the west side of the Natural Heritage System
 - Street D and E: approximately 70 metres
 - Street D and E: approximately 75 metres
- On the east side of the Natural Heritage System
 - Street L and N: approximately 190 metres
 - Street D and E: approximately 145 metres

The provision of at least 60 metres between the proposed intersections along Burnhamthorpe Road East meet the TAC guidelines.

11.3 Traffic Calming Measures

GHD recommends incorporating curb extensions, also known as bulb-outs, on Local and Avenue roads within the proposed subdivision to enhance pedestrian safety and promote traffic calming. Curb extensions are designed as horizontal projections of the curb into the roadway, narrowing the road width and creating a safer, more pedestrian-friendly environment. These features are typically installed at intersections but may also be placed mid-block in areas with anticipated high pedestrian activity, such as near schools, parks, or public trails.

The benefits of curb extensions are several: they reduce vehicle speeds by visually and physically narrowing the road, slow turning vehicles at intersections, and shorten the crossing distance for pedestrians, improving their visibility to drivers. They also prevent vehicles from parking too close to intersections, ensuring better sightlines for all road users.

Typically, curb extensions are recommended for long, straight, and uninterrupted sections of roadways exceeding 300 meters, especially on roads with posted speed limits of 50 kph or higher, as they effectively break up the linear road profile and deter speeding. However, while the proposed draft plan does not include such extended straight roadway sections, GHD still recommends strategic implementation of curb extensions at specific locations to maximize safety and connectivity benefits. These locations, identified in **Figure 16** below, target areas with expected pedestrian desire lines near Village Squares or access the trail system to enhance pedestrian safety.

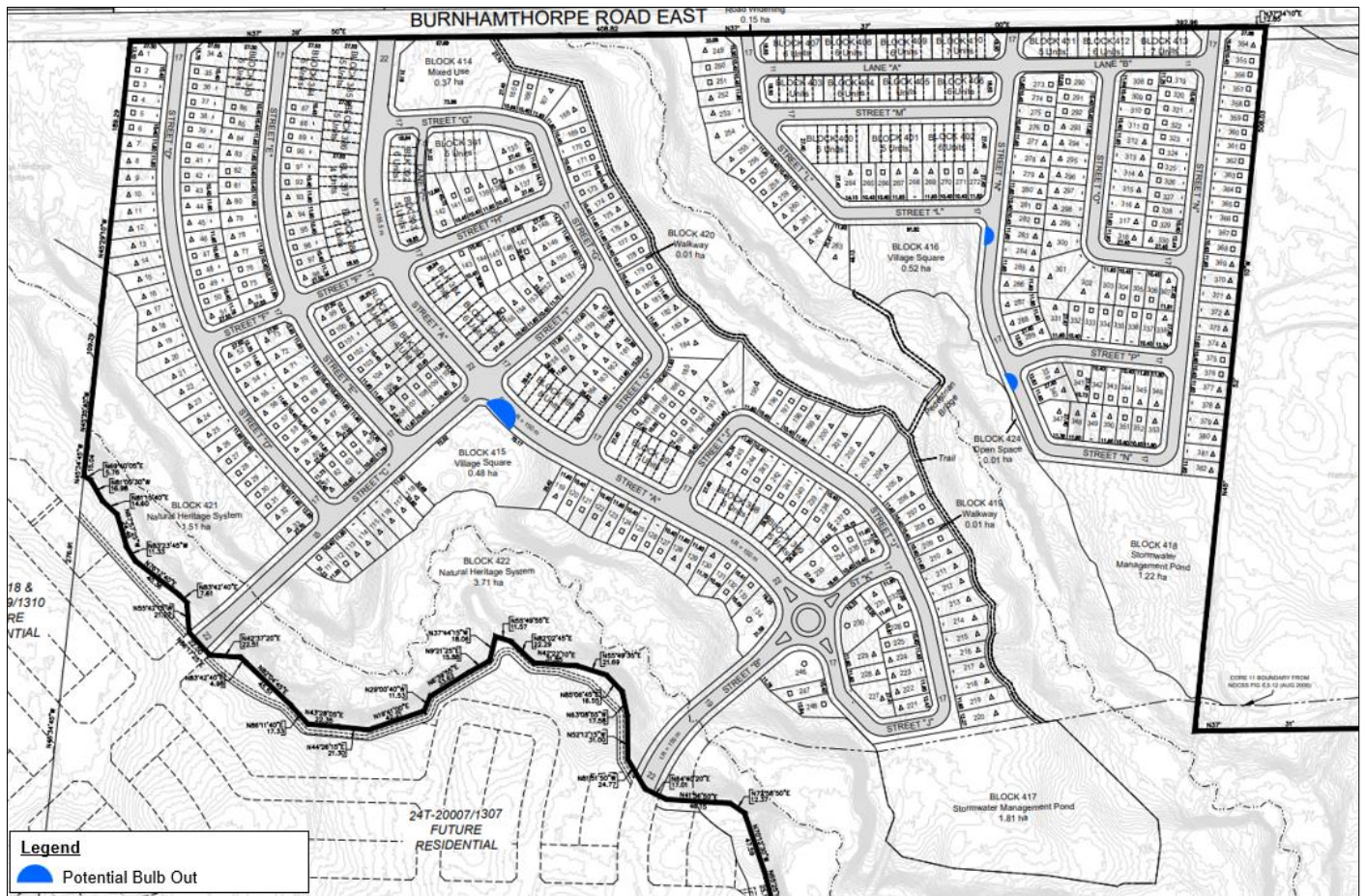


Figure 18 Proposed Traffic Calming Measure Locations

11.4 Active Transportation and Trail Connectivity

Outside of the study area, a multi-use path is currently provided along the north side of William Halton Parkway.

West of Trafalgar Road, Wheat Boom Drive continues to have a signed bike route, as well as North Park Boulevard (the continuation of Threshing Mill Boulevard west of Sixth Line). These two routes continue west until they connect with the multi-use trail and bike lane provided at Neyagawa Boulevard.

With the series of cycling infrastructure provided outside of the study area and their connections to other cycling routes, it is recommended to connect the signed routes along Threshing Mill Boulevard and Wheat Boom Drive on both sides of Trafalgar Road along their respective future connections within the proposed subdivision.

The proposed pedestrian and cyclist facilities and for the subdivision including major trails are illustrated in **Figure 19** below.

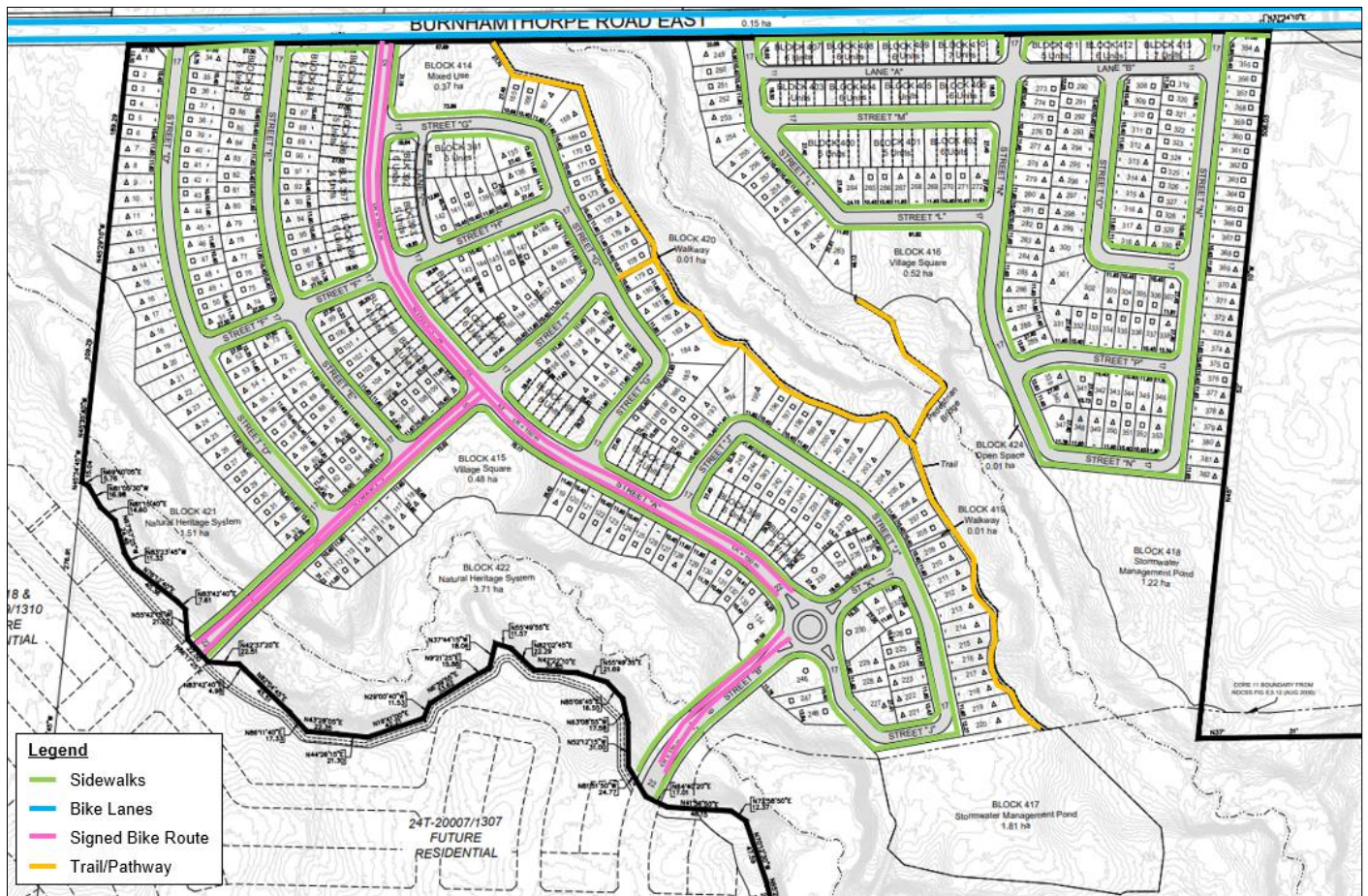


Figure 19 Proposed Pedestrian and Cycling Facilities

11.5 Future Transit Routes/Stops

GHD conducted a thorough review of the North Oakville East Secondary Plan's Transportation Plan to identify designated transit corridors within the proposed development and determine appropriate locations for potential transit stops. This analysis was guided by the scoring framework outlined in the North Oakville Transit Plan, which awards points based on factors such as accessibility, proximity to key destinations, and integration with the broader transit network. A total of six transit stops, each receiving the maximum score of 10 points, have been identified and are shown on **Figure 18**.

The proposed transit stops are strategically located along key transit corridors within the subject lands to optimize coverage and accessibility. These stops include:

- Northbound near-side transit stop at Burnhamthorpe Road East and Street A
- Northbound, southbound, and eastbound near-side transit stops at Street A and Street C/Street I
- Eastbound and southbound near-side transit stops at Street A/Street J and Street B/Street K.

These transit stop locations were selected to ensure that most residences within the development are within walking distance of public transit, enhancing mobility and reducing reliance on private vehicles. Additionally, the stops have been planned with accessibility in mind, with features such as shelters and/or seating. However, with no internal vehicle connection of the NHS connecting the west and east blocks of the development, it is expected that residents of the east block will have to walk over to the nearest transit stops at Street A and Street C unless a future transit stop is provided on Burnhamthorpe Road closure to the block.

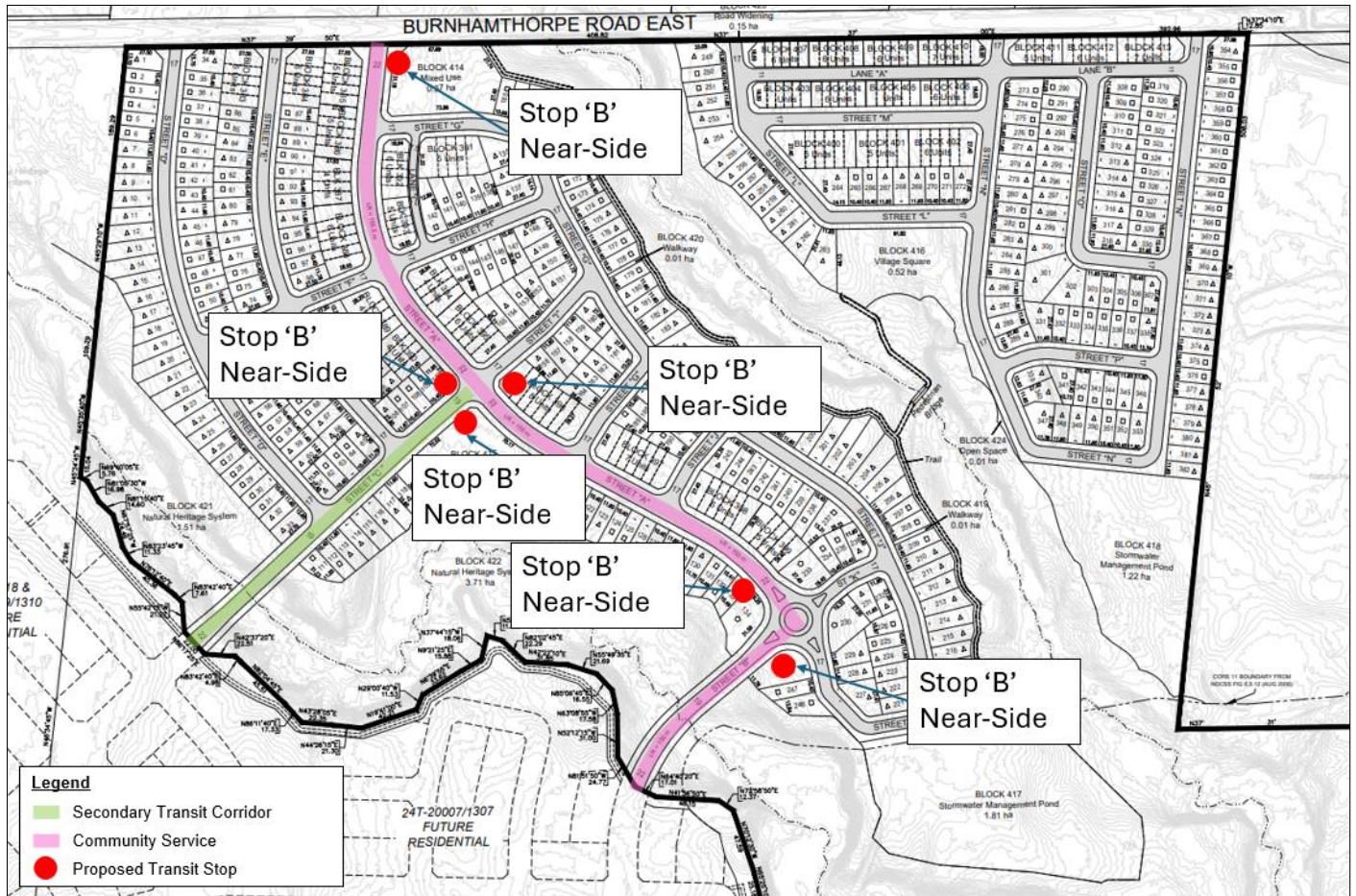


Figure 20 Transit Facilities Plan

Stop B transit stops area identified as “Info” stops, with each stop designed to include a bench, lighting, power pedestal, and a wheelchair landing pad.

12. Conclusion

A Draft Plan of Subdivision prepared by Korsiak Urban Planning consists of a total 556 dwelling units, consisting of 382 single detached dwelling units and 174 townhouse dwelling units

Access to the Joshua Creek North lands is proposed via six new proposed roads (Streets A, D, E, L, and two legs of Street N)

Based on ITE Trip Generation rates, the subject site is expected to generate a total of 306 two-way vehicle trips during the a.m. peak hour consisting of 76 inbound and 230 outbound trips. During the p.m. peak hour, it is expected to generate 400 new two-way vehicle trips consisting of 248 inbound and 152 outbound trips.

Under existing traffic conditions, all intersections are operating at acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours, with the exception of:

- William Halton Parkway and Burnhamthorpe Road East

Under the 2031 and 2036 future background and future total traffic conditions, with the addition of corridor growth, background development traffic, the redistribution of some of the background development traffic, the addition of site traffic from the proposed development, and signal improvements, all intersections are operating at acceptable v/c ratios and levels of service during the a.m. peak and p.m. peak hours with the exception of:

- Trafalgar Road and Burnhamthorpe Road East
- William Halton Parkway and Burnhamthorpe Road East
- William Halton Parkway/Burnhamthorpe Road West and Ninth Line

Due to the significant amount of traffic added to the study intersections through corridor growth and the redistribution of background traffic GHD completed a sensitivity analysis for the intersection of William Halton Parkway and Burnhamthorpe Road East to identify the required lane configuration and traffic controls under the future horizon years. The sensitivity analysis included widening William Halton Parkway to a four-lane cross-section (consistent with the Region's Class EA) and signaling the intersection. A signal warrant was completed for the intersection under the 2031 Future Background condition and confirmed that signalization was warranted.

Under the ultimate horizon year, with the implementation of the planned and proposed improvements, the intersection continues to operate with some movements at critical levels, however all movements operate below capacity and with reduced delays and queuing compared to the analysis with existing lane configurations and traffic controls. The Region should continue to monitor the operation of Regional roadways to determine when improvements become warranted.

TDM measures are proposed for the development that include pedestrian and cycling connections to encourage residents to explore alternatives to reduce single-occupant vehicle trips

Application of the Town of Oakville Zoning By-Law 2009-189 parking rates to the subject site results in a requirement of a minimum of 938 parking spaces. Each single and semi-detached dwelling unit will contain a minimum of two parking spaces (one in the garage and one in the driveway) while the townhouse dwelling units are proposed to contain at least one parking space, satisfying the Town's requirement.

The traffic study confirms that the proposed residential development can be accommodated within the existing and planned road network without significant negative effects on traffic flow, capacity, or safety.

Appendix A

Terms of Reference

Raf Andrenacci

From: Aquisha Khan <aquisha.khan@oakville.ca>
Sent: Friday, November 1, 2024 4:26 PM
To: Raf Andrenacci; Khan, Ayesha
Cc: Will Maria
Subject: RE: [EXTERNAL] Terms of Reference - Joshua Creek Phase 7

Hi Raf,

Please see my comments below for the above-mentioned application. If you have any questions, please feel free to contact me.

Regards
Aquisha

Aquisha Khan, (She/Her/Hers), P. Eng.
Transportation Engineer
Transportation and Engineering
Town of Oakville | 905-845-6601, ext. 3236 | www.oakville.ca

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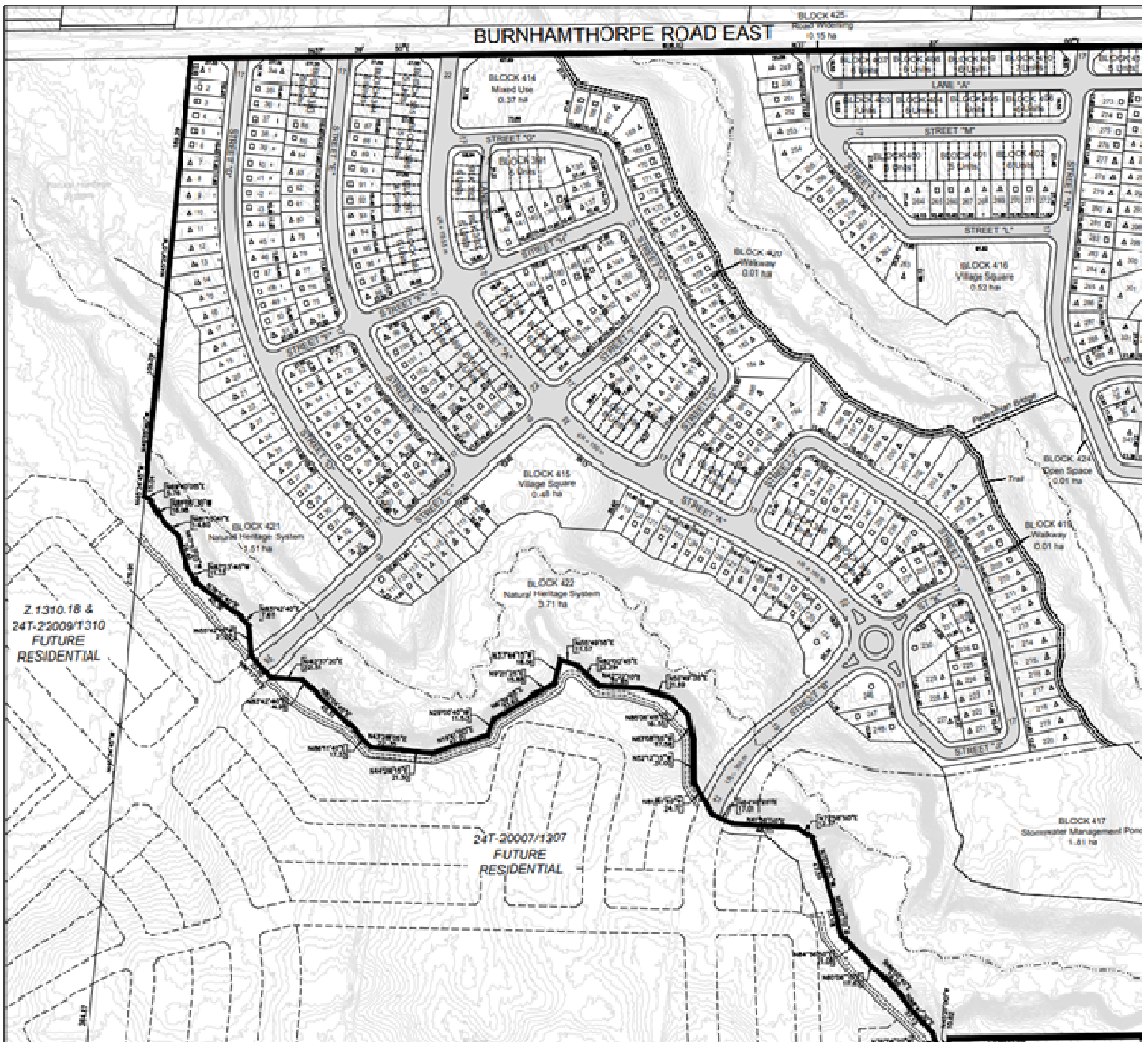
From: Raf Andrenacci <Raf.Andrenacci@ghd.com>
Sent: Tuesday, October 22, 2024 12:42 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>; Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Will Maria <William.Maria@ghd.com>
Subject: [EXTERNAL] Terms of Reference - Joshua Creek Phase 7

Hello,

GHD Inc. has been retained to prepare a Transportation Impact Study for a proposed residential development on lands located south of Burnhamthorpe East between Trafalgar Road and Ninth Line in the Town of Oakville.



The proposed development will consist of a total of 382 single detached dwelling units and 174 townhouse dwelling units. Access to the subject lands is proposed via six new north/south roadways intersecting Burnhamthorpe Road East as well as through connections to the lands to the south.



In order to properly scope this project, we ask that the Region and Town review and provide comments on the following scope and provide any additional items required as part of the study.

Study intersections

- Existing
 - Trafalgar Road and Burnhamthorpe Road East
 - Burnhamthorpe Road East and William Halton Parkway
 - William Halton Parkway and Ninth Line
- Future
 - Burnhamthorpe Road East and Street A
 - Burnhamthorpe Road East and Street D
 - Burnhamthorpe Road East and Street E
 - Burnhamthorpe Road East and Street L
 - Burnhamthorpe Road East and Street N (west leg)

- Burnhamthorpe Road East and Street N (east leg)
- Street C and Street D
- Street A/J and Street B/K

Traffic Data

Updated traffic counts at the existing study intersections will be undertaken during the a.m. and p.m. peak hours.

Study Peak Hours

Weekday a.m. and p.m. peak hours

Study Horizon Year

2024 (existing), [build-out and five years post build-out](#) and ~~2029 (five years from the date of the study)~~, as per the Region’s TIS Guidelines.

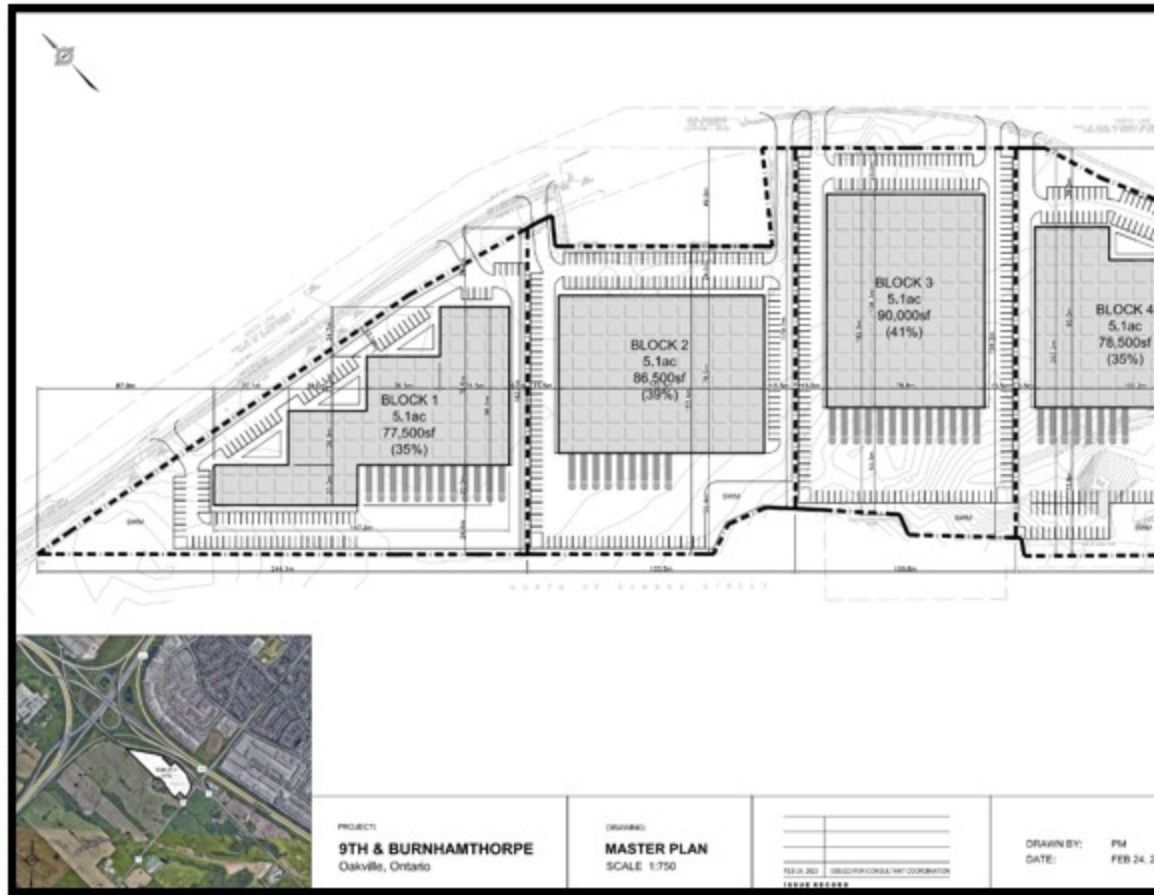
Background Growth Rate

GHD will consult with Region staff and Town staff to determine the growth rates to be used. [\[AK\]](#) (3.5%)

Background Development Traffic

The following developments will be included as background developments:

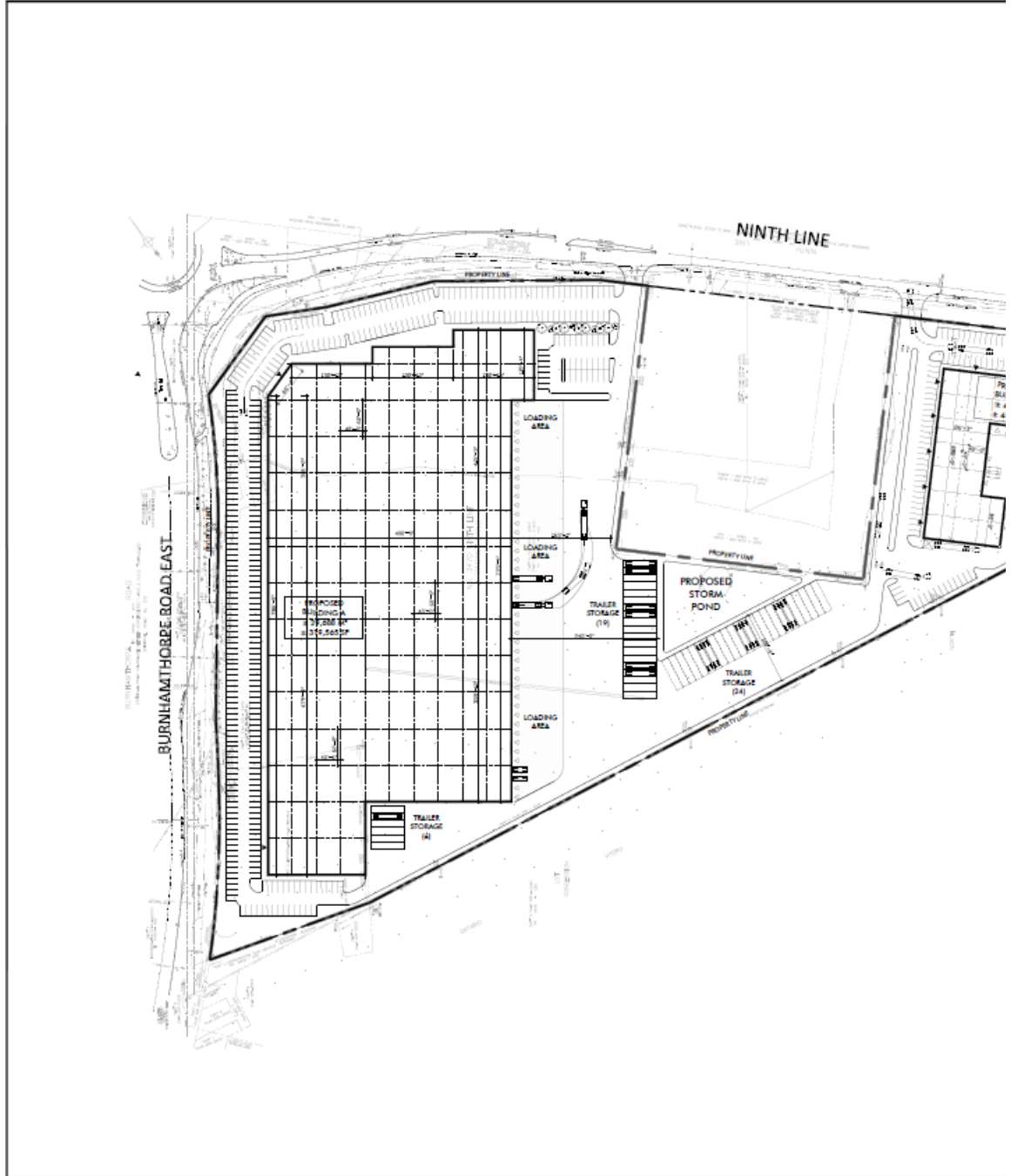
- Rampen Holdings Inc. (1086 Burnhamthorpe Road East)
- [Mattamy \(Joshua Creek\) Limited - Phase 3 - Z.1307.07 and 24T-20007/1307](#)
- [1187 Burnhamthorpe Rd. E Oakville](#)
- [Infrastructure Ontario - 4233, 4040 and 4180 Trafalgar Road - OPA 1213.01](#)
- Calculation would be required for the following upcoming developments. 1st two (2) are located in the northwest quadrant of Burnhamthorpe Rd & Ninth Line.
 - ❖ Description: Proposed 4 employment/industrial office buildings, total GFA of 30,890 m²



❖ Description: To permit and construct two industrial warehouse buildings (84,066m²),



- ❖ Description: To permit and construct two industrial warehouse buildings (35,000 m2), located in the southwest quadrant of the Burnhamthorpe Rd W / William Halton Parkway / Ninth Line intersection.



Town staff have also identified two developments located near the roundabout of William Halton Parkway and Ninth Line. Town staff will provide information relating to GFA, LUC, and the location of the accesses so GHD can include these developments.

Trip Generation

Will be completed using rates published by the ITE Trip Generation 11th Edition, LUC 210 and 215 (Single Family Detached and Attached Housing).

Town staff have requested that trip assignment for the Joshua Creek Phase 3 assume that 50% of site trips will head north to Burnhamthorpe, site trips for the subject site will assume that only 10% of site trips will head south to Dundas Street.

The directional distribution of traffic approaching and departing the site will be determined based on the TTS 2016 data, existing local patterns, and first principles.

The analysis will identify the transportation system requirements and other measures required to ensure the acceptable operation of the study intersections, including auxiliary turning lanes and other transportation infrastructure improvements.

TAC, Region, and Town guidelines will be reviewed in order to complete an access management. Review for the site access that reviews corner clearance, driveway spacing, auxiliary lanes, corner radii, and clear throat distance.

The parking supply will be reviewed in accordance with the Town's Zoning By-law. [\[AK\]](#) - please include an on-street parking map with anticipated location of hydrants.

[\[AK\]](#) - Please include the following in the report:

- ❖ A traffic calming section
- ❖ An internal functional review
- ❖ Intersection spacing validity
- ❖ Future/Proposed Transit locations
- ❖ Active Transportation Section
- ❖ TDM measures

If the above scope is acceptable to the Town and Region, it will form the basis of our scope of work.

Thank you,

Raf

Rafael Andrenacci

Transportation Planner

GHD Ltd.

T: 905 814 4386 | E: raf.andrenacci@ghd.com

100 Milverton Drive Suite 404, Mississauga, ON L5R 4H1 | www.ghd.com

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Raf Andrenacci

From: Khan, Ayesha <Ayesha.Khan@halton.ca>
Sent: Wednesday, October 23, 2024 4:15 PM
To: Raf Andrenacci
Subject: RE: Terms of Reference - Joshua Creek Phase 7

Hello Raf,
Thank you for circulating to us. We offer no further comments, please proceed with the study as outlined below.

Thanks,
Ayesha

Ayesha Khan

Project Manager I – Transportation Development Review

Development Services

Public Works

Halton Region

905-825-6000, ext. | 1-866-442-5866



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From: Raf Andrenacci <Raf.Andrenacci@ghd.com>
Sent: Tuesday, October 22, 2024 12:42 PM
To: Aquisha Khan <aquisha.khan@oakville.ca>; Khan, Ayesha <Ayesha.Khan@halton.ca>
Cc: Will Maria <William.Maria@ghd.com>
Subject: Terms of Reference - Joshua Creek Phase 7

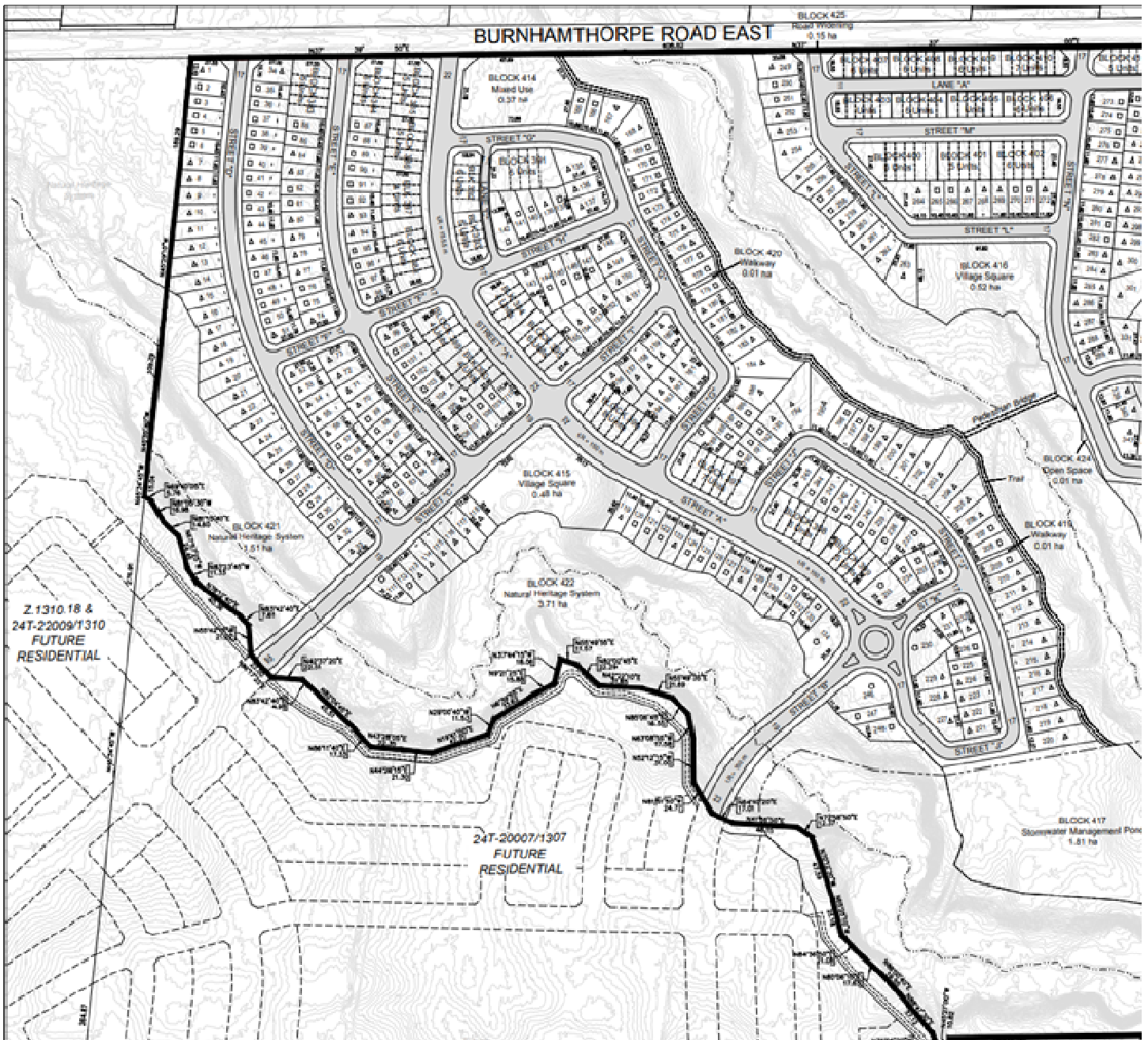
CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you are unsure or need assistance please contact the IT Service Desk.

Hello,

GHD Inc. has been retained to prepare a Transportation Impact Study for a proposed residential development on lands located south of Burnhamthorpe East between Trafalgar Road and Ninth Line in the Town of Oakville.



The proposed development will consist of a total of 382 single detached dwelling units and 174 townhouse dwelling units. Access to the subject lands is proposed via six new north/south roadways intersecting Burnhamthorpe Road East as well as through connections to the lands to the south.



In order to properly scope this project, we ask that the Region and Town review and provide comments on the following scope and provide any additional items required as part of the study.

Study intersections

- Existing
 - Trafalgar Road and Burnhamthorpe Road East
 - Burnhamthorpe Road East and William Halton Parkway
 - William Halton Parkway and Ninth Line
- Future
 - Burnhamthorpe Road East and Street A
 - Burnhamthorpe Road East and Street D
 - Burnhamthorpe Road East and Street E
 - Burnhamthorpe Road East and Street L
 - Burnhamthorpe Road East and Street N (west leg)

- Burnhamthorpe Road East and Street N (east leg)
- Street C and Street D
- Street A/J and Street B/K

Traffic Data

Updated traffic counts at the existing study intersections will be undertaken during the a.m. and p.m. peak hours.

Study Peak Hours

Weekday a.m. and p.m. peak hours

Study Horizon Year

2024 (existing) and 2029 (five years from the date of the study), as per the Region's TIS Guidelines.

Background Growth Rate

GHD will consult with Region staff and Town staff to determine the growth rates to be used.

Background Development Traffic

The following developments will be included as background developments:

- Rampen Holdings Inc. (1086 Burnhamthorpe Road East)
- Joshua Creek Phase 3

Town staff have also identified two developments located near the roundabout of William Halton Parkway and Ninth Line. Town staff will provide information relating to GFA, LUC, and the location of the accesses so GHD can include these developments.

Trip Generation

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The directional distribution of traffic approaching and departing the site will be determined based on the TTS 2016 data, existing local patterns, and first principles.

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If the above scope is acceptable to the Town and Region, it will form the basis of our scope of work.

Thank you,

Raf

Rafael Andrenacci

Transportation Planner

GHD Ltd.

T: 905 814 4386 | E: raf.andrenacci@ghd.com

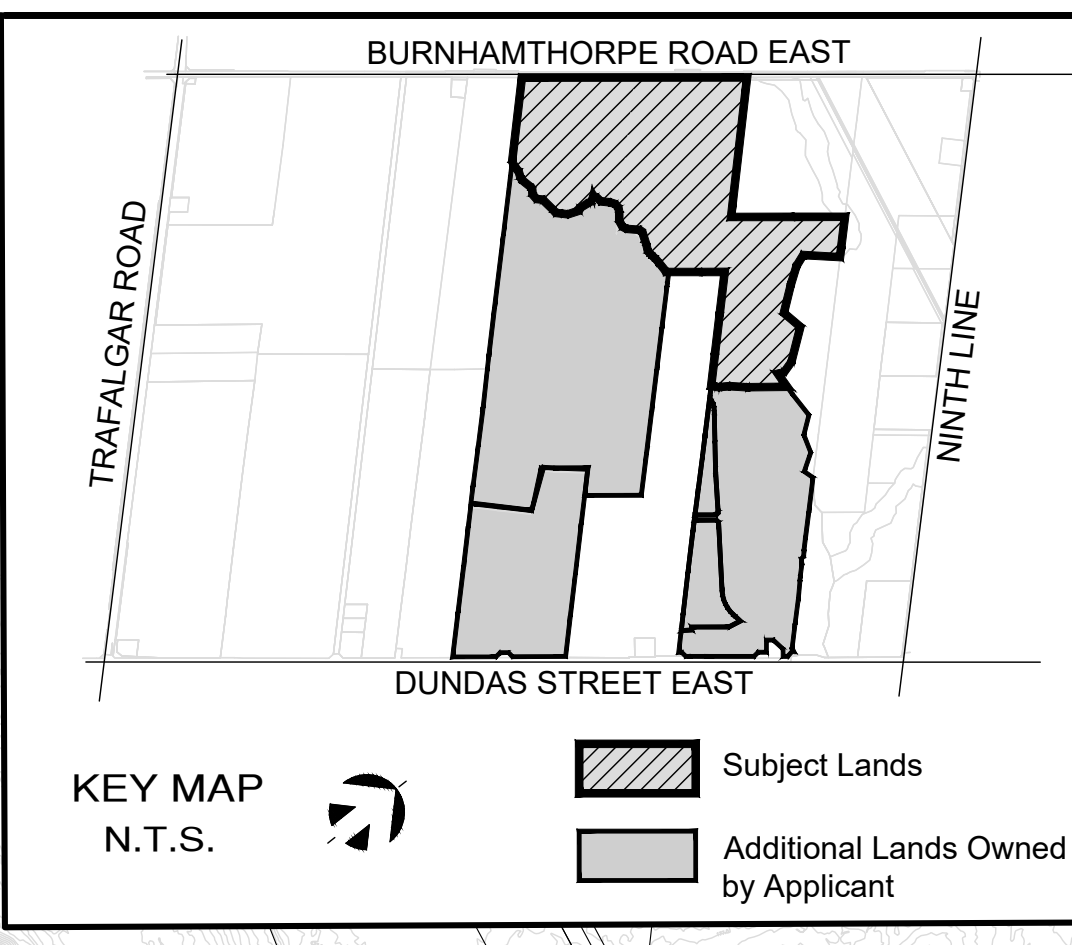
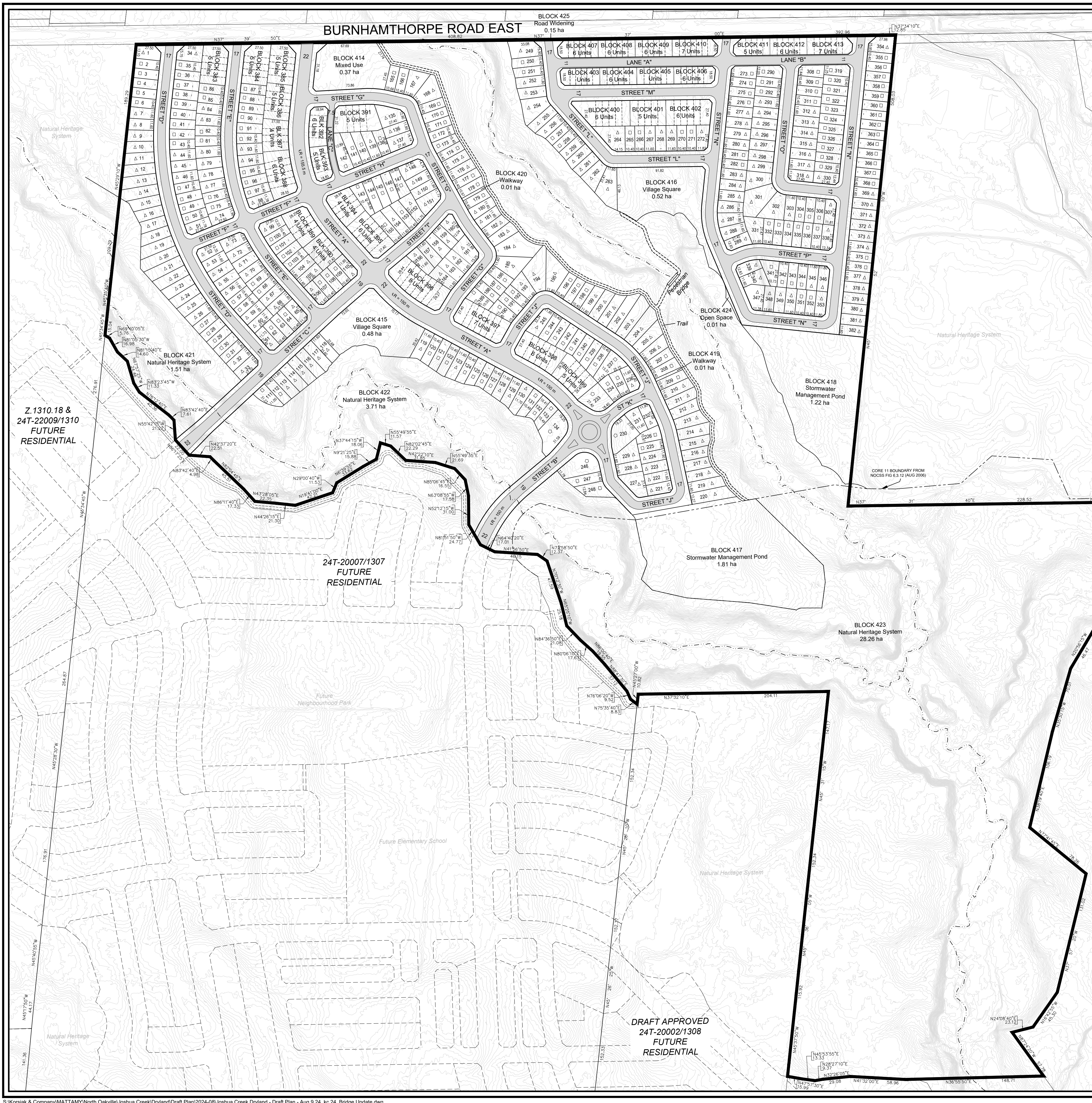
100 Milverton Drive Suite 404, Mississauga, ON L5R 4H1 | www.ghd.com

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Appendix B

Draft Plan of Subdivision



DRAFT PLAN OF SUBDIVISION 24T-
Mattamy (Joshua Creek) Limited
JOSHUA CREEK NORTH

PART OF LOTS 7, 8 AND 9
CONCESSION 1, NORTH OF DUNDAS STREET
 GEOGRAPHIC TOWNSHIP OF TRAFALGAR
 NOW IN THE
TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON

OWNER'S AUTHORIZATION
 I HEREBY AUTHORIZE KORSIAK URBAN PLANNING TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF OAKVILLE FOR APPROVAL.

SIGNED: *Jason Spidegak* DATE: November 27, 2024
 Jason Spidegak
 MATTAMY (JOSHUA CREEK) LIMITED
 433 STEELES AVENUE EAST SUITE 110
 MILTON, ON L9T 8Z4

SURVEYOR'S CERTIFICATE
 I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE CORRECTLY AND ACCURATELY SHOWN.

SIGNED: *Ross Den Broeder* DATE: August 6, 2024
 Ross Den Broeder, Ontario Land Surveyor

rpe
 R-P-E Surveying LTD.
 ONTARIO LAND SURVEYORS
 643 CHRISLEA ROAD, SUITE 7, WOODBRIDGE, ONTARIO L4L 8A3
 Tel: (416) 835-5000 Fax: (416) 835-5001

ADDITIONAL INFORMATION (UNDER SECTION 51 (17) OF THE PLANNING ACT)

A) SHOWN ON PLAN G) SHOWN ON PLAN
 B) SHOWN ON PLAN H) MUNICIPAL AND PIPED WATER TO BE PROVIDED
 C) SHOWN ON PLAN I) CLAY LOAM
 D) SHOWN ON PLAN J) SHOWN ON PLAN
 E) SHOWN ON PLAN K) SANITARY AND STORM SEWERS TO BE PROVIDED
 F) SHOWN ON PLAN L) SHOWN ON PLAN

LAND USE SCHEDULE

Land Use	Lots/Blocks	Block Total	Area (ha)	Units
△ Single Detached (38')	1, 7-26, 32-34, 44-46, 51-56, 59-61, 65-67, 70-74, 77-80, 83, 84, 93, 94, 98, 99, 104-106, 110, 113-119, 123, 128-130, 135-137, 139, 148-152, 154, 156-164, 167, 168, 175, 176, 180-185, 193-195, 199-206, 210-224, 227-229, 231, 232, 236, 245, 249, 252-256, 259-264, 267-269, 272, 277-280, 283-289, 293-303, 307, 312-318, 330, 331, 338-340, 345-350, 353, 354, 369-374, 377-382	202	7.74	202
□ Single Detached (34')	2-6, 27-31, 35-43, 47-50, 57, 58, 62-64, 68, 69, 75, 76, 81, 82, 85-92, 95-97, 100-103, 107-109, 111, 112, 120-122, 124-127, 131-133, 136, 140-147, 153, 155, 165, 166, 169-174, 177-179, 186-192, 196-198, 207-209, 225, 226, 234, 235, 237-244, 247, 248, 250, 251, 257, 258, 265, 266, 270, 271, 273-276, 281, 282, 290-292, 304-306, 308-311, 319-329, 332-337, 341-344, 351, 352, 355-368, 375, 376	176	5.41	176
○ Single Detached (77' Turning Circle)	134, 230, 233, 246	4	0.32	4
Street Townhouses (7.01m)	383-391, 394-402	18	2.23	96
Rear Lane Townhouses (6.05m)	392, 393, 403-413	13	0.99	78
Mixed Use	414	1	0.37	
Village Square	415, 416	2	1.00	
Stormwater Management Pond	417, 418	2	3.03	
Walkway	419, 420	2	0.02	
Natural Heritage System	421-423	3	33.48	
Open Space	424	1	0.01	
Road Widening	425	1	0.15	
7.5 m ROW (75 m)				0.06
11 m ROW (269 m)				0.33
17 m ROW (3,353 m)				5.79
19 m ROW (348 m)				0.69
22 m ROW (633 m)				1.40
Total	1-425	425	63.02	556

SDE CALCULATIONS - TOTAL

Unit Type	Lots/Blocks	Units	SDE*
Single Detached	1-382	382	382.0
Townhouse	383-413	174	140.9
Total		556	522.9

* SDE Factors:
 Detached - 1.00
 Townhouse - 0.81

Aug 9, 2024	First Submission	A	WS
Jan 22, 2024	Draft for Review	A	SP
DATE	REVISION	DWG	BY

NOTES:

- Pavement illustration is diagrammatic
- Connector or Avenue to Connector or Avenue daylight triangle = 7.5m
- All other daylight triangles = 3.5m

mattamy HOMES

SCALE 1:2000 August 9, 2024

DRAWN BY: WS CHECKED BY: KC

KORSIAK Urban Planning
 206-277 Lakeshore Road East
 Oakville, Ontario L6J 1H9
 T: 905-257-0227
 info@korsiak.com

Appendix C

Traffic Data



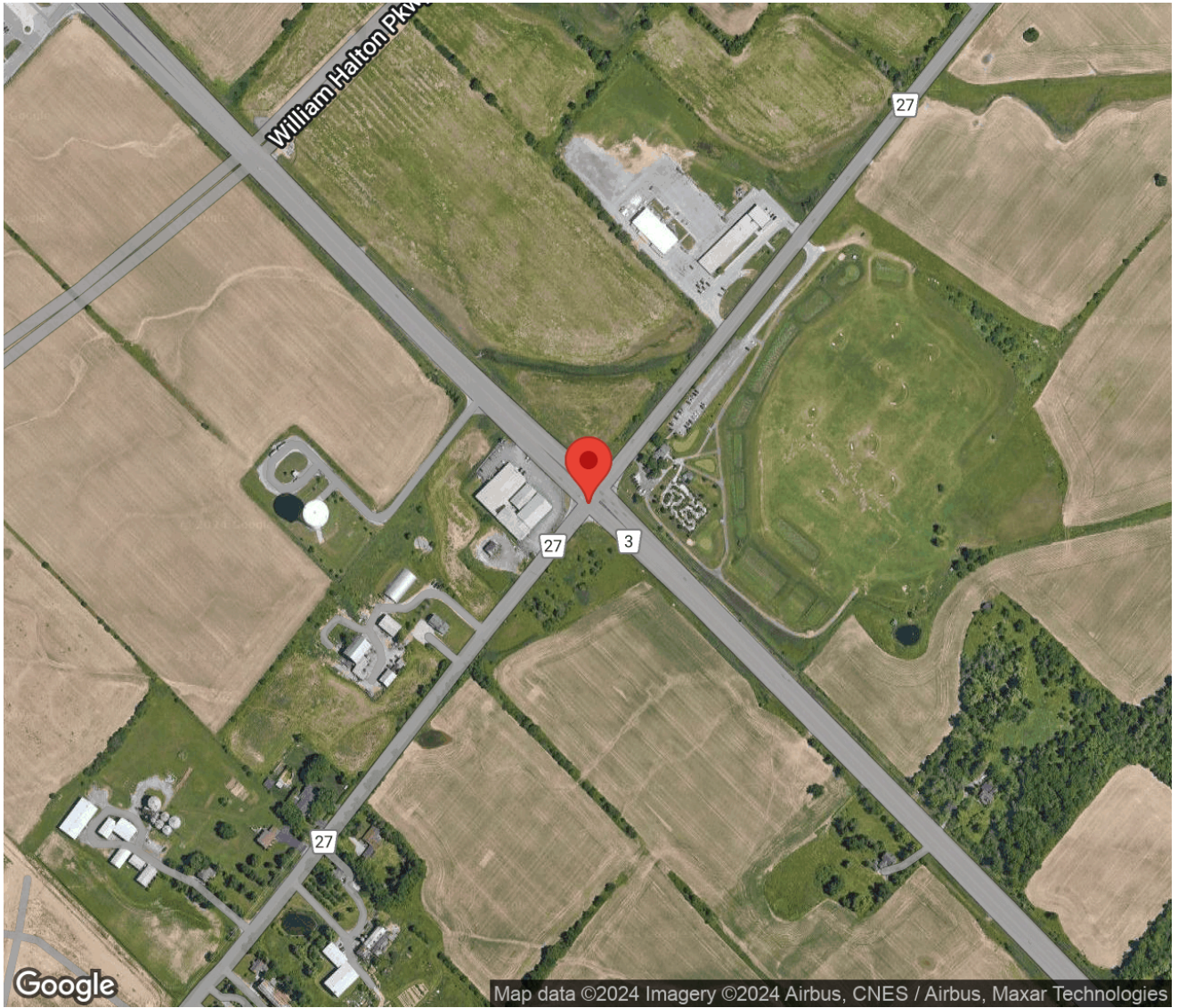
Project #24-454 - GHD

Intersection Count Report

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
Municipality: Oakville
Count Date: Tuesday, Oct 22, 2024
Site Code: 2445400001
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-09:00, 16:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
Site Code: 2445400001
Municipality: Oakville
Count Date: Oct 22, 2024



Traffic Count Summary

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

Trafalgar Rd - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	11	680	26	0	717	0	25	579	51	0	655	0	1372
08:00 - 09:00	68	980	39	0	1087	0	60	828	117	0	1005	0	2092
BREAK													
16:00 - 17:00	37	658	64	0	759	0	90	1185	160	0	1435	0	2194
17:00 - 18:00	28	850	83	0	961	0	101	1047	135	0	1283	0	2244
GRAND TOTAL	144	3168	212	0	3524	0	276	3639	463	0	4378	0	7902



Traffic Count Summary

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

Burnhamthorpe Rd E - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	46	51	10	0	107	0	44	52	66	0	162	0	269
08:00 - 09:00	70	57	37	0	164	0	73	119	85	0	277	0	441
BREAK													
16:00 - 17:00	83	98	30	0	211	0	43	99	42	0	184	0	395
17:00 - 18:00	83	93	14	0	190	0	41	133	63	0	237	0	427
GRAND TOTAL	282	299	91	0	672	0	201	403	256	0	860	0	1532



Traffic Count Data

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	2	145	8	0	155	0	7	1	0	8	0	0	0	0	0	0
07:15	4	123	4	0	131	0	9	0	0	9	0	0	0	0	0	0
07:30	2	167	5	0	174	1	17	0	0	18	0	0	0	0	0	0
07:45	2	206	8	0	216	0	6	0	0	6	0	0	0	0	0	0
08:00	5	213	12	0	230	0	12	1	0	13	0	0	0	0	0	0
08:15	25	246	8	0	279	0	11	0	0	11	0	0	0	0	0	0
08:30	23	235	10	0	268	0	18	0	0	18	0	0	0	0	0	0
08:45	15	238	8	0	261	0	7	0	0	7	0	0	0	0	0	0
SUBTOTAL	78	1573	63	0	1714	1	87	2	0	90	0	0	0	0	0	0



Traffic Count Data

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

North Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	7	136	9	0	152	0	3	2	0	5	0	0	0	0	0	0
16:15	11	169	21	0	201	1	6	0	0	7	0	0	0	0	0	0
16:30	11	169	12	0	192	0	7	0	0	7	0	0	0	0	0	0
16:45	6	164	20	0	190	1	4	0	0	5	0	0	0	0	0	0
17:00	8	222	20	0	250	0	6	0	0	6	0	0	0	0	0	0
17:15	5	187	21	0	213	0	10	0	0	10	0	0	0	0	0	0
17:30	9	225	22	0	256	1	9	0	0	10	0	0	0	0	0	0
17:45	5	187	20	0	212	0	4	0	0	4	0	0	0	0	0	0
SUBTOTAL	62	1459	145	0	1666	3	49	2	0	54	0	0	0	0	0	0
GRAND TOTAL	140	3032	208	0	3380	4	136	4	0	144	0	0	0	0	0	0



Traffic Count Data

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

South Approach - Trafalgar Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	5	118	8	0	131	0	3	0	0	3	0	0	0	0	0	0
07:15	6	103	6	0	115	1	4	0	0	5	0	0	0	0	0	0
07:30	4	150	13	0	167	1	9	0	0	10	0	0	0	0	0	0
07:45	8	184	23	0	215	0	8	1	0	9	0	0	0	0	0	0
08:00	10	214	32	0	256	0	7	1	0	8	0	0	0	0	0	0
08:15	11	201	20	0	232	1	10	0	0	11	0	0	0	0	0	0
08:30	17	214	31	0	262	0	10	2	0	12	0	0	0	0	0	0
08:45	20	163	31	0	214	1	9	0	0	10	0	0	0	0	0	0
SUBTOTAL	81	1347	164	0	1592	4	60	4	0	68	0	0	0	0	0	0



Traffic Count Data

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

East Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	27	28	7	0	62	0	0	0	0	0	0	0	0	0	0	0
07:15	7	10	1	0	18	1	0	0	0	1	0	0	0	0	0	0
07:30	5	7	1	0	13	0	0	0	0	0	0	0	0	0	0	0
07:45	6	6	1	0	13	0	0	0	0	0	0	0	0	0	0	0
08:00	10	14	5	0	29	0	0	0	0	0	0	0	0	0	0	0
08:15	21	17	3	0	41	1	2	0	0	3	0	0	0	0	0	0
08:30	14	7	13	0	34	0	2	0	0	2	0	0	0	0	0	0
08:45	24	15	15	0	54	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	114	104	46	0	264	2	4	1	0	7	0	0	0	0	0	0



Traffic Count Data

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

West Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds	
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total		
07:00	5	6	10	0	21	0	0	0	0	0	0	0	0	0	0	0	0
07:15	9	5	8	0	22	0	0	0	0	0	0	0	0	0	0	0	0
07:30	12	15	18	0	45	0	1	1	0	2	0	0	0	0	0	0	0
07:45	17	25	29	0	71	1	0	0	0	1	0	0	0	0	0	0	0
08:00	20	31	24	0	75	0	0	2	0	2	0	0	0	0	0	0	0
08:15	18	26	19	0	63	0	0	0	0	0	0	0	0	0	0	0	0
08:30	24	27	20	0	71	0	0	0	0	0	0	0	0	0	0	0	0
08:45	11	35	19	0	65	0	0	1	0	1	0	0	0	0	0	0	0
SUBTOTAL	116	170	147	0	433	1	1	4	0	6	0	0	0	0	0	0	0



Traffic Count Data

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Municipality: Oakville
 Count Date: Oct 22, 2024

West Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	7	20	11	0	38	0	0	0	0	0	0	0	0	0	0	0
16:15	7	20	17	0	44	0	3	1	0	4	0	0	0	0	0	0
16:30	13	27	8	0	48	0	0	0	0	0	0	0	0	0	0	0
16:45	16	27	5	0	48	0	2	0	0	2	0	0	0	0	0	0
17:00	17	28	19	0	64	1	0	1	0	2	0	0	0	0	0	0
17:15	8	38	15	0	61	1	0	0	0	1	0	0	0	0	0	0
17:30	6	23	17	0	46	0	1	0	0	1	0	0	0	0	0	0
17:45	8	43	11	0	62	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	82	226	103	0	411	2	6	2	0	10	0	0	0	0	0	0
GRAND TOTAL	198	396	250	0	844	3	7	6	0	16	0	0	0	0	0	0

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 09:00:00

One Hour Peak

From: 08:00:00
To: 09:00:00

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
Site Code: 2445400001
Count Date: Oct 22, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
	1038	901	1939
	49	37	86
	0	0	0
Totals	1087	938	2025

Trafalgar Rd

	0	0	0	0
	1	48	0	0
	38	932	68	0
Totals	39	980	68	0

East Approach

	Out	In	Total
	158	301	459
	6	3	9
	0	0	0
Totals	164	304	468

Burnhamthorpe Rd E

				Totals
	0	0	0	0
	0	0	73	73
	0	0	119	119
	0	3	82	85

Peds: 0

Peds: 0



Peds: 0

Peds: 0

Burnhamthorpe Rd E

Totals			
0	0	0	0
37	36	1	0
57	53	4	0
70	69	1	0

West Approach

	Out	In	Total
	274	149	423
	3	7	10
	0	0	0
Totals	277	156	433

Totals			
60	58	2	0
828	792	36	0
117	114	3	0
0	0	0	0

Trafalgar Rd

South Approach

	Out	In	Total
	964	1083	2047
	41	52	93
	0	0	0
Totals	1005	1135	2140

- Cars

- Trucks

- Bicycles

Comments



Peak Hour Summary

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Count Date: Oct 22, 2024
 Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Burnhamthorpe Rd E						West Approach Burnhamthorpe Rd E						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
08:00	5	225	13	0	0	243	10	221	33	0	0	264	10	14	5	0	0	29	20	31	26	0	0	77	613
08:15	25	257	8	0	0	290	12	211	20	0	0	243	22	19	3	0	0	44	18	26	19	0	0	63	640
08:30	23	253	10	0	0	286	17	224	33	0	0	274	14	9	13	0	0	36	24	27	20	0	0	71	667
08:45	15	245	8	0	0	268	21	172	31	0	0	224	24	15	16	0	0	55	11	35	20	0	0	66	613
Grand Total	68	980	39	0	0	1087	60	828	117	0	0	1005	70	57	37	0	0	164	73	119	85	0	0	277	2533
Approach %	6.3	90.2	3.6	0	-	-	6	82.4	11.6	0	-	-	42.7	34.8	22.6	0	-	-	26.4	43	30.7	0	-	-	-
Totals %	2.7	38.7	1.5	0	42.9	-	2.4	32.7	4.6	0	39.7	-	2.8	2.3	1.5	0	6.5	-	2.9	4.7	3.4	0	10.9	-	-
PHF	0.68	0.95	0.75	0	0.94	0.94	0.71	0.92	0.89	0	0.92	0.92	0.73	0.75	0.58	0	0.75	0.75	0.76	0.85	0.82	0	0.9	0.95	0.95
Cars	68	932	38	0	0	1038	58	792	114	0	0	964	69	53	36	0	0	158	73	119	82	0	0	274	2434
% Cars	100	95.1	97.4	0	0	95.5	96.7	95.7	97.4	0	0	95.9	98.6	93	97.3	0	0	96.3	100	100	96.5	0	0	98.9	96.1
Trucks	0	48	1	0	0	49	2	36	3	0	0	41	1	4	1	0	0	6	0	0	3	0	0	3	99
% Trucks	0	4.9	2.6	0	0	4.5	3.3	4.3	2.6	0	0	4.1	1.4	7	2.7	0	0	3.7	0	0	3.5	0	0	1.1	3.9
Bicycles	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	0

Peak Hour Diagram

Specified Period

From: 16:00:00
To: 18:00:00

One Hour Peak

From: 16:30:00
To: 17:30:00

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
Site Code: 2445400001
Count Date: Oct 22, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Trafalgar Rd runs N/S

North Approach

	Out	In	Total
	845	1240	2085
	28	30	58
	0	0	0
Totals	873	1270	2143

Trafalgar Rd

	0	0	0	0
	0	27	1	0
	73	742	30	0
Totals	73	769	31	0

East Approach

	Out	In	Total
	238	294	532
	3	5	8
	0	0	0
Totals	241	299	540

Burnhamthorpe Rd E

				Totals
	0	0	0	0
	0	2	54	56
	0	2	120	122
	0	1	47	48

Peds: 0

Peds: 0



Peds: 0

Peds: 0

Burnhamthorpe Rd E

Totals			
0	0	0	0
33	31	2	0
109	109	0	0
99	98	1	0

West Approach

	Out	In	Total
	221	262	483
	5	2	7
	0	0	0
Totals	226	264	490

Totals				
82	1181	146	0	
	80	1155	144	0
	2	26	2	0
	0	0	0	0

Trafalgar Rd

South Approach

Out	In	Total	
	1379	887	2266
	30	29	59
	0	0	0
Totals	1409	916	2325

- Cars

- Trucks

- Bicycles

Comments



Peak Hour Summary

Intersection: Trafalgar Rd & Burnhamthorpe Rd E
 Site Code: 2445400001
 Count Date: Oct 22, 2024
 Period: 16:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Trafalgar Rd						South Approach Trafalgar Rd						East Approach Burnhamthorpe Rd E						West Approach Burnhamthorpe Rd E						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
16:30	11	176	12	0	0	199	24	309	43	0	0	376	20	26	8	0	0	54	13	27	8	0	0	48	677
16:45	7	168	20	0	0	195	19	283	31	0	0	333	30	42	13	0	0	85	16	29	5	0	0	50	663
17:00	8	228	20	0	0	256	13	288	42	0	0	343	29	22	8	0	0	59	18	28	20	0	0	66	724
17:15	5	197	21	0	0	223	26	301	30	0	0	357	20	19	4	0	0	43	9	38	15	0	0	62	685
Grand Total	31	769	73	0	0	873	82	1181	146	0	0	1409	99	109	33	0	0	241	56	122	48	0	0	226	2749
Approach %	3.6	88.1	8.4	0	-	-	5.8	83.8	10.4	0	-	-	41.1	45.2	13.7	0	-	-	24.8	54	21.2	0	-	-	
Totals %	1.1	28	2.7	0	31.8		3	43	5.3	0	51.3		3.6	4	1.2	0	8.8		2	4.4	1.7	0	8.2		
PHF	0.7	0.84	0.87	0	0.85		0.79	0.96	0.85	0	0.94		0.83	0.65	0.63	0	0.71		0.78	0.8	0.6	0	0.86	0.95	
Cars	30	742	73	0	845		80	1155	144	0	1379		98	109	31	0	238		54	120	47	0	221		2683
% Cars	96.8	96.5	100	0	96.8		97.6	97.8	98.6	0	97.9		99	100	93.9	0	98.8		96.4	98.4	97.9	0	97.8		97.6
Trucks	1	27	0	0	28		2	26	2	0	30		1	0	2	0	3		2	2	1	0	5		66
% Trucks	3.2	3.5	0	0	3.2		2.4	2.2	1.4	0	2.1		1	0	6.1	0	1.2		3.6	1.6	2.1	0	2.2		2.4
Bicycles	0	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	0		0	0	0	0	0		0	0	0	0	0		0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	



Project #24-454 - GHD

Intersection Count Report

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
Municipality: Oakville
Count Date: Tuesday, Oct 22, 2024
Site Code: 2445400002
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-09:00, 16:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
Site Code: 2445400002
Municipality: Oakville
Count Date: Oct 22, 2024





Traffic Count Summary

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

Burnhamthorpe Rd E - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	0	0	0	0	0	0	0	113	0	113	0	113
08:00 - 09:00	0	0	0	0	0	0	1	0	246	0	247	0	247
BREAK													
16:00 - 17:00	0	0	0	0	0	0	4	0	256	0	260	0	260
17:00 - 18:00	0	0	0	0	0	0	1	0	307	0	308	0	308
GRAND TOTAL	0	0	0	0	0	0	6	0	922	0	928	0	928



Traffic Count Summary

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

William Halton Pkwy - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	57	382	0	0	439	0	0	594	3	0	597	0	1036
08:00 - 09:00	124	472	0	0	596	0	0	759	2	0	761	0	1357
BREAK													
16:00 - 17:00	203	973	0	1	1177	0	0	416	3	0	419	0	1596
17:00 - 18:00	206	1068	0	0	1274	0	0	462	3	0	465	0	1739
GRAND TOTAL	590	2895	0	1	3486	0	0	2231	11	0	2242	0	5728



Traffic Count Data

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

South Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	0	20	0	20	0	0	1	0	1	0	0	0	0	0	0
07:15	0	0	15	0	15	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	33	0	33	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	41	0	41	0	0	3	0	3	0	0	0	0	0	0
08:00	1	0	75	0	76	0	0	2	0	2	0	0	0	0	0	0
08:15	0	0	51	0	51	0	0	1	0	1	0	0	0	0	0	0
08:30	0	0	62	0	62	0	0	2	0	2	0	0	0	0	0	0
08:45	0	0	53	0	53	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	1	0	350	0	351	0	0	9	0	9	0	0	0	0	0	0



Traffic Count Data

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

South Approach - Burnhamthorpe Rd E

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	3	0	64	0	67	0	0	1	0	1	0	0	0	0	0	0
16:15	1	0	68	0	69	0	0	3	0	3	0	0	0	0	0	0
16:30	0	0	62	0	62	0	0	1	0	1	0	0	0	0	0	0
16:45	0	0	54	0	54	0	0	3	0	3	0	0	0	0	0	0
17:00	0	0	78	0	78	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	68	0	68	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	73	0	73	0	0	1	0	1	0	0	0	0	0	0
17:45	1	0	87	0	88	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	5	0	554	0	559	0	0	9	0	9	0	0	0	0	0	0
GRAND TOTAL	6	0	904	0	910	0	0	18	0	18	0	0	0	0	0	0



Traffic Count Data

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	10	70	0	0	80	0	4	0	0	4	0	0	0	0	0	0
07:15	17	89	0	0	106	0	4	0	0	4	0	0	0	0	0	0
07:30	12	90	0	0	102	1	4	0	0	5	0	0	0	0	0	0
07:45	17	108	0	0	125	0	8	0	0	8	0	5	0	0	5	0
08:00	27	95	0	0	122	1	5	0	0	6	0	0	0	0	0	0
08:15	35	104	0	0	139	3	6	0	0	9	0	1	0	0	1	0
08:30	20	130	0	0	150	2	6	0	0	8	0	0	0	0	0	0
08:45	36	121	0	0	157	0	4	0	0	4	0	0	0	0	0	0
SUBTOTAL	174	807	0	0	981	7	41	0	0	48	0	6	0	0	6	0



Traffic Count Data

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

East Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	42	219	0	0	261	0	2	0	0	2	0	0	0	0	0	0
16:15	50	220	0	0	270	1	3	0	0	4	0	0	0	0	0	0
16:30	52	249	0	1	302	1	3	0	0	4	0	0	0	0	0	0
16:45	57	270	0	0	327	0	6	0	0	6	0	1	0	0	1	0
17:00	62	270	0	0	332	0	0	0	0	0	0	0	0	0	0	0
17:15	52	285	0	0	337	0	4	0	0	4	0	0	0	0	0	0
17:30	39	270	0	0	309	0	2	0	0	2	0	1	0	0	1	0
17:45	48	236	0	0	284	5	0	0	0	5	0	0	0	0	0	0
SUBTOTAL	402	2019	0	1	2422	7	20	0	0	27	0	2	0	0	2	0
GRAND TOTAL	576	2826	0	1	3403	14	61	0	0	75	0	8	0	0	8	0



Traffic Count Data

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	0	85	1	0	86	0	4	0	0	4	0	0	0	0	0	0
07:15	0	125	0	0	125	0	2	0	0	2	0	0	0	0	0	0
07:30	0	168	2	0	170	0	6	0	0	6	0	0	0	0	0	0
07:45	0	200	0	0	200	0	4	0	0	4	0	0	0	0	0	0
08:00	0	189	1	0	190	0	3	0	0	3	0	0	0	0	0	0
08:15	0	155	0	0	155	0	1	0	0	1	0	0	0	0	0	0
08:30	0	182	0	0	182	0	3	0	0	3	0	0	0	0	0	0
08:45	0	222	1	0	223	0	4	0	0	4	0	0	0	0	0	0
SUBTOTAL	0	1326	5	0	1331	0	27	0	0	27	0	0	0	0	0	0



Traffic Count Data

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Municipality: Oakville
 Count Date: Oct 22, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	0	86	1	0	87	0	3	0	0	3	0	0	0	0	0	0
16:15	0	107	0	0	107	0	6	0	0	6	0	0	0	0	0	0
16:30	0	94	0	0	94	0	8	0	0	8	0	0	0	0	0	0
16:45	0	109	2	0	111	0	3	0	0	3	0	0	0	0	0	0
17:00	0	117	0	0	117	0	6	0	0	6	0	0	0	0	0	0
17:15	0	121	0	0	121	0	5	0	0	5	0	0	0	0	0	0
17:30	0	111	1	0	112	0	1	0	0	1	0	0	0	0	0	0
17:45	0	99	2	0	101	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	0	844	6	0	850	0	34	0	0	34	0	0	0	0	0	0
GRAND TOTAL	0	2170	11	0	2181	0	61	0	0	61	0	0	0	0	0	0

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 09:00:00

One Hour Peak

From: 08:00:00
To: 09:00:00

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
Site Code: 2445400002
Count Date: Oct 22, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: William Halton Pkwy runs E/W

East Approach

	Out	In	Total
	568	989	1557
	27	16	43
	1	0	1
Totals	596	1005	1601

William Halton Pkwy

			Totals
0	0	0	0
0	11	748	759
0	0	2	2

Peds: 0



Peds: 0

Peds: 0

Peds: 0

William Halton Pkwy

Totals			
0	0	0	0
472	450	21	1
124	118	6	0

West Approach

	Out	In	Total
	750	451	1201
	11	21	32
	0	1	1
Totals	761	473	1234

Totals	1	246	0
	1	241	0
	0	5	0
	0	0	0

Burnhamthorpe Rd E

South Approach

	Out	In	Total
	242	120	362
	5	6	11
	0	0	0
Totals	247	126	373

- Cars

- Trucks

- Bicycles

Comments



Peak Hour Summary

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Count Date: Oct 22, 2024
 Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach				South Approach Burnhamthorpe Rd E				East Approach William Halton Pkwy				West Approach William Halton Pkwy				Total Vehic es										
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total								
08:00					0		1		77	0	0	78	28	100			0	0	128			192	1	0	0	193	399
08:15					0		0		52	0	0	52	38	111			0	0	149			156	0	0	0	156	357
08:30					0		0		64	0	0	64	22	136			0	0	158			185	0	0	0	185	407
08:45					0		0		53	0	0	53	36	125			0	0	161			226	1	0	0	227	441
Grand Total					0	0	1		246	0	0	247	124	472			0	0	596			759	2	0	0	761	1604
Approach %					-		0.4		99.6	0		-	20.8	79.2			0		-			99.7	0.3	0		-	
Totals %						0	0.1		15.3	0		15.4	7.7	29.4			0		37.2			47.3	0.1	0		47.4	
PHF					0		0.25		0.8	0		0.79	0.82	0.87			0		0.93			0.84	0.5	0		0.84	0.91
Cars					0		1		241	0		242	118	450			0		568			748	2	0		750	1560
% Cars					0		100		98	0		98	95.2	95.3			0		95.3			98.6	100	0		98.6	97.3
Trucks					0		0		5	0		5	6	21			0		27			11	0	0		11	43
% Trucks					0		0		2	0		2	4.8	4.4			0		4.5			1.4	0	0		1.4	2.7
Bicycles					0		0		0	0		0	0	1			0		1			0	0	0		0	1
% Bicycles					0		0		0	0		0	0	0.2			0		0.2			0	0	0		0	0.1
Peds					0	-				0	-								0	-			0	-			0
% Peds					0	-				0	-								0	-			0	-			-

Peak Hour Diagram

Specified Period

From: 16:00:00
To: 18:00:00

One Hour Peak

From: 16:45:00
To: 17:45:00

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
Site Code: 2445400002
Count Date: Oct 22, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: William Halton Pkwy runs E/W

East Approach

	Out	In	Total
	1305	731	2036
	12	19	31
	2	0	2
Totals	1319	750	2069

William Halton Pkwy

			Totals
0	0	0	0
0	15	458	473
0	0	3	3

Peds: 0

Peds: 0



Peds: 0

Peds: 0

William Halton Pkwy

Totals			
0	0	0	0
1109	1095	12	2
210	210	0	0

West Approach

	Out	In	Total
	461	1095	1556
	15	12	27
	0	2	2
Totals	476	1109	1585

Totals			
0	277	0	0
	0	273	0
	0	4	0
	0	0	0

Burnhamthorpe Rd E

South Approach

	Out	In	Total
	273	213	486
	4	0	4
	0	0	0
Totals	277	213	490

- Cars

- Trucks

- Bicycles

Comments



Peak Hour Summary

Intersection: Burnhamthorpe Rd E & William Halton Pkwy
 Site Code: 2445400002
 Count Date: Oct 22, 2024
 Period: 16:00 - 18:00

Peak Hour Data (16:45 - 17:45)

Start Time	North Approach				South Approach Burnhamthorpe Rd E				East Approach William Halton Pkwy				West Approach William Halton Pkwy				Total Vehicles										
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻		Peds	Total								
16:45					0		0		57	0	0	57	57	277			0	0	334			112	2	0	0	114	505
17:00					0		0		78	0	0	78	62	270			0	0	332			123	0	0	0	123	533
17:15					0		0		68	0	0	68	52	289			0	0	341			126	0	0	0	126	535
17:30					0		0		74	0	0	74	39	273			0	0	312			112	1	0	0	113	499
Grand Total					0	0	0		277	0	0	277	210	1109			0	0	1319			473	3	0	0	476	2072
Approach %					-		0		100	0	-		15.9	84.1			0		-			99.4	0.6	0		-	
Totals %					0		0		13.4	0	13.4		10.1	53.5			0		63.7			22.8	0.1	0		23	
PHF					0	0	0		0.89	0	0.89		0.85	0.96			0		0.97			0.94	0.38	0		0.94	0.97
Cars					0		0		273	0		273	210	1095			0		1305			458	3	0		461	2039
% Cars					0		0		98.6	0		98.6	100	98.7			0		98.9			96.8	100	0		96.8	98.4
Trucks					0		0		4	0		4	0	12			0		12			15	0	0		15	31
% Trucks					0		0		1.4	0		1.4	0	1.1			0		0.9			3.2	0	0		3.2	1.5
Bicycles					0		0		0	0		0	0	2			0		2			0	0	0		0	2
% Bicycles					0		0		0	0		0	0	0.2			0		0.2			0	0	0		0	0.1
Peds					0	-				0	-								0	-			0	-			0
% Peds					0	-				0	-								0	-			0	-			-



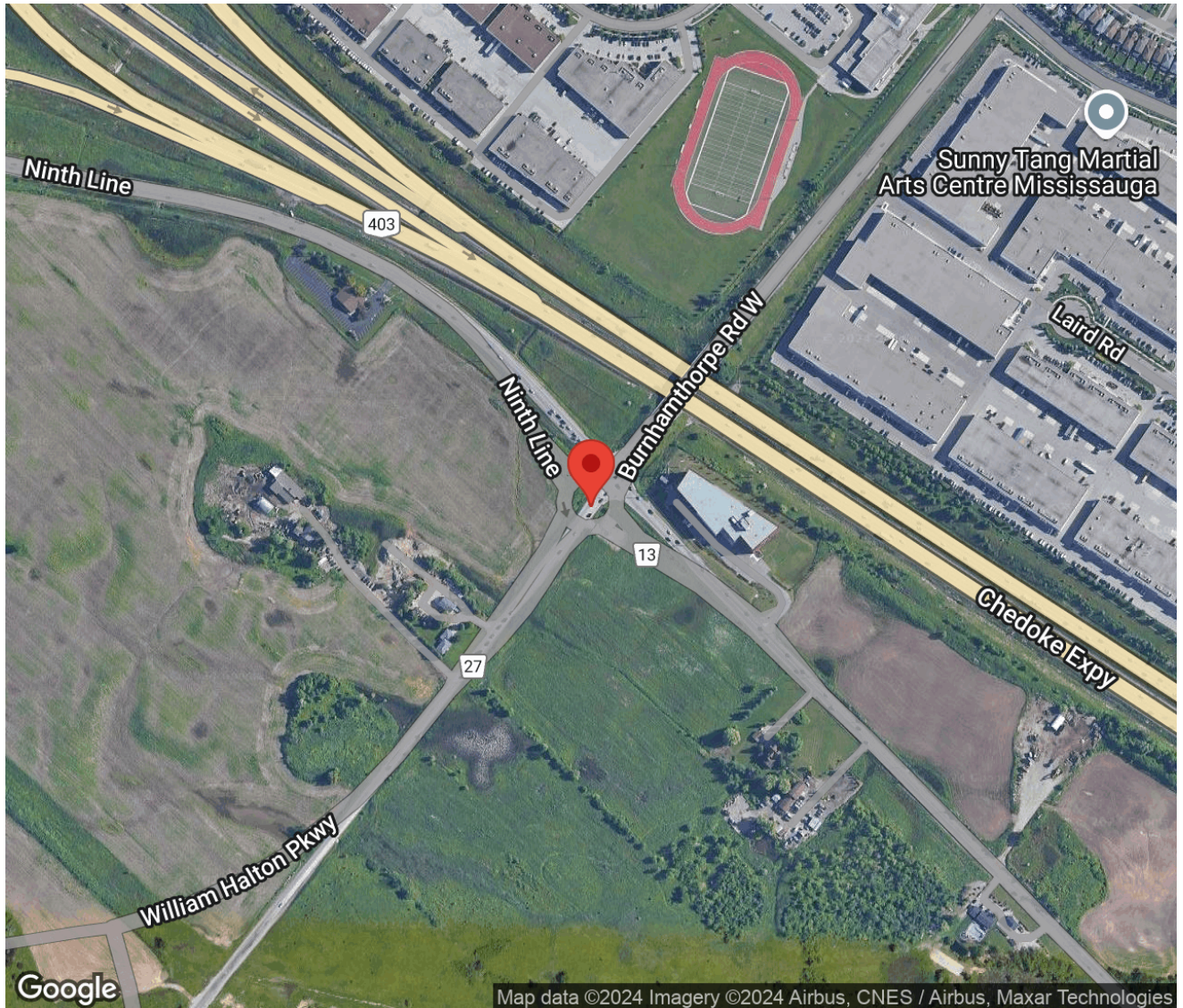
Project #24-454 - GHD

Intersection Count Report

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
Municipality: Oakville
Count Date: Tuesday, Oct 22, 2024
Site Code: 2445400003
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-09:00, 16:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection: Ninth Line & William Halton Pkwy -
Burnhamthorpe Rd W
Site Code: 2445400003
Municipality: Oakville
Count Date: Oct 22, 2024





Traffic Count Summary

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

Ninth Line - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	87	484	19	0	590	0	123	251	83	0	457	0	1047
08:00 - 09:00	63	538	72	0	673	0	95	347	113	1	556	0	1229
BREAK													
16:00 - 17:00	62	331	84	0	477	0	342	703	281	0	1326	0	1803
17:00 - 18:00	52	312	85	0	449	0	369	596	264	1	1230	0	1679
GRAND TOTAL	264	1665	260	0	2189	0	929	1897	741	2	3569	0	5758



Traffic Count Summary

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

Burnhamthorpe Rd W - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	45	288	94	0	427	0	44	434	238	0	716	0	1143
08:00 - 09:00	64	426	105	0	595	0	112	582	309	0	1003	0	1598
BREAK													
16:00 - 17:00	68	749	96	0	913	0	43	460	177	0	680	0	1593
17:00 - 18:00	37	827	124	0	988	0	74	505	185	0	764	0	1752
GRAND TOTAL	214	2290	419	0	2923	0	273	1981	909	0	3163	0	6086



Traffic Count Data

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

North Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	25	74	4	0	103	1	4	0	0	5	0	0	0	0	0	0
07:15	25	104	3	0	132	0	3	0	0	3	0	0	0	0	0	0
07:30	19	132	6	0	157	0	3	0	0	3	0	0	0	0	0	0
07:45	17	161	6	0	184	0	3	0	0	3	0	0	0	0	0	0
08:00	16	136	7	0	159	1	3	1	0	5	0	0	0	0	0	0
08:15	14	112	18	0	144	0	1	0	0	1	0	0	0	0	0	0
08:30	15	126	25	0	166	0	4	1	0	5	0	0	0	0	0	0
08:45	16	154	19	0	189	1	2	1	0	4	0	0	0	0	0	0
SUBTOTAL	147	999	88	0	1234	3	23	3	0	29	0	0	0	0	0	0



Traffic Count Data

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

North Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	18	73	23	0	114	0	0	0	0	0	0	0	0	0	0	0
16:15	22	85	19	0	126	0	3	1	0	4	0	0	0	0	0	0
16:30	10	77	24	0	111	0	0	1	0	1	0	0	0	0	0	0
16:45	11	92	16	0	119	1	1	0	0	2	0	0	0	0	0	0
17:00	18	83	27	0	128	0	1	0	0	1	0	0	0	0	0	0
17:15	13	67	20	0	100	0	0	1	0	1	0	0	0	0	0	0
17:30	10	80	14	0	104	0	0	0	0	0	0	0	0	0	0	0
17:45	11	81	23	0	115	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	113	638	166	0	917	1	5	3	0	9	0	0	0	0	0	0
GRAND TOTAL	260	1637	254	0	2151	4	28	6	0	38	0	0	0	0	0	0



Traffic Count Data

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

South Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	24	42	9	0	75	3	4	0	0	7	0	0	0	0	0	0
07:15	40	50	19	0	109	2	6	0	0	8	0	0	0	0	0	0
07:30	22	61	11	0	94	2	3	0	0	5	0	0	0	0	0	0
07:45	25	84	43	0	152	5	1	1	0	7	0	0	0	0	0	0
08:00	20	52	18	0	90	3	5	0	0	8	0	0	0	0	0	0
08:15	17	86	33	0	136	1	6	1	0	8	0	0	0	0	0	0
08:30	22	96	25	0	143	4	4	0	0	8	0	0	0	0	0	0
08:45	27	97	36	1	161	1	1	0	0	2	0	0	0	0	0	0
SUBTOTAL	197	568	194	1	960	21	30	2	0	53	0	0	0	0	0	0



Traffic Count Data

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

South Approach - Ninth Line

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	68	174	61	0	303	2	1	0	0	3	0	0	0	0	0	0
16:15	68	209	77	0	354	2	2	0	0	4	0	0	0	0	0	0
16:30	100	172	69	0	341	2	3	0	0	5	0	0	0	0	0	0
16:45	97	141	73	0	311	3	1	1	0	5	0	0	0	0	0	0
17:00	102	145	56	0	303	1	1	0	0	2	0	0	0	0	0	0
17:15	101	175	84	0	360	1	5	0	1	7	0	0	0	0	0	0
17:30	93	119	69	0	281	1	4	1	0	6	0	0	0	0	0	0
17:45	68	146	54	0	268	2	1	0	0	3	0	0	0	0	0	0
SUBTOTAL	697	1281	543	0	2521	14	18	2	1	35	0	0	0	0	0	0
GRAND TOTAL	894	1849	737	1	3481	35	48	4	1	88	0	0	0	0	0	0



Traffic Count Data

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

East Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	10	45	22	0	77	2	2	0	0	4	0	0	0	0	0	0
07:15	7	66	22	0	95	2	2	0	0	4	0	0	0	0	0	0
07:30	15	71	20	0	106	1	3	0	0	4	0	0	0	0	0	0
07:45	6	91	28	0	125	2	3	2	0	7	0	5	0	0	5	0
08:00	21	93	32	0	146	0	3	0	0	3	0	0	0	0	0	0
08:15	18	104	26	0	148	0	7	0	0	7	0	0	0	0	0	0
08:30	14	105	25	0	144	2	2	0	0	4	0	0	0	0	0	0
08:45	9	109	21	0	139	0	3	1	0	4	0	0	0	0	0	0
SUBTOTAL	100	684	196	0	980	9	25	3	0	37	0	5	0	0	5	0



Traffic Count Data

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

East Approach - Burnhamthorpe Rd W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
16:00	17	166	29	0	212	0	1	0	0	1	0	0	0	0	0	0
16:15	12	181	31	0	224	0	1	0	0	1	0	0	0	0	0	0
16:30	20	191	17	0	228	0	2	1	0	3	0	0	0	0	0	0
16:45	19	206	18	0	243	0	1	0	0	1	0	0	0	0	0	0
17:00	9	212	23	0	244	0	0	1	0	1	0	0	0	0	0	0
17:15	10	219	37	0	266	0	1	0	0	1	0	0	0	0	0	0
17:30	10	203	30	0	243	0	1	1	0	2	0	0	0	0	0	0
17:45	8	188	31	0	227	0	3	1	0	4	0	0	0	0	0	0
SUBTOTAL	105	1566	216	0	1887	0	10	4	0	14	0	0	0	0	0	0
GRAND TOTAL	205	2250	412	0	2867	9	35	7	0	51	0	5	0	0	5	0



Traffic Count Data

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Municipality: Oakville
 Count Date: Oct 22, 2024

West Approach - William Halton Pkwy

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	6	74	30	0	110	0	2	3	0	5	0	0	0	0	0	0
07:15	10	85	48	0	143	0	1	2	0	3	0	0	0	0	0	0
07:30	8	123	68	0	199	0	3	4	0	7	0	0	0	0	0	0
07:45	20	144	80	0	244	0	2	3	0	5	0	0	0	0	0	0
08:00	29	146	83	0	258	0	3	1	0	4	0	0	0	0	0	0
08:15	29	121	57	0	207	0	1	2	0	3	0	0	0	0	0	0
08:30	31	144	71	0	246	0	4	1	0	5	0	0	0	0	0	0
08:45	23	163	91	0	277	0	0	3	0	3	0	0	0	0	0	0
SUBTOTAL	156	1000	528	0	1684	0	16	19	0	35	0	0	0	0	0	0

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 09:00:00

One Hour Peak

From: 08:00:00
To: 09:00:00

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
Site Code: 2445400003
Count Date: Oct 22, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Burnhamthorpe Rd W runs E/W

North Approach

	Out	In	Total
	658	547	1205
	15	17	32
	0	0	0
Totals	673	564	1237

Ninth Line

	0	0	0	0
	3	10	2	0
	69	528	61	0
Totals	72	538	63	0

East Approach

	Out	In	Total
	577	747	1324
	18	11	29
	0	0	0
Totals	595	758	1353

William Halton Pkwy

				Totals
	0	0	0	0
	0	0	112	112
	0	8	574	582
	0	7	302	309

Peds: 0

Peds: 0



Peds: 0

Peds: 0

Burnhamthorpe Rd W

Totals			
0	0	0	0
105	104	1	0
426	411	15	0
64	62	2	0

West Approach

	Out	In	Total
	988	566	1554
	15	27	42
	0	0	0
Totals	1003	593	1596

Totals			
95	86	331	112
347	9	16	1
113	0	0	0
1	0	0	0

Ninth Line

South Approach

	Out	In	Total
	530	893	1423
	26	19	45
	0	0	0
Totals	556	912	1468

- Cars

- Trucks

- Bicycles

Comments



Peak Hour Summary

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Count Date: Oct 22, 2024
 Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Ninth Line						South Approach Ninth Line						East Approach Burnhamthorpe Rd W						West Approach William Halton Pkwy						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
08:00	17	139	8	0	0	164	23	57	18	0	0	98	21	96	32	0	0	149	29	149	84	0	0	262	673
08:15	14	113	18	0	0	145	18	92	34	0	0	144	18	111	26	0	0	155	29	122	59	0	0	210	654
08:30	15	130	26	0	0	171	26	100	25	0	0	151	16	107	25	0	0	148	31	148	72	0	0	251	721
08:45	17	156	20	0	0	193	28	98	36	1	0	163	9	112	22	0	0	143	23	163	94	0	0	280	779
Grand Total	63	538	72	0	0	673	95	347	113	1	0	556	64	426	105	0	0	595	112	582	309	0	0	1003	2827
Approach %	9.4	79.9	10.7	0	-	-	17.1	62.4	20.3	0.2	-	-	10.8	71.6	17.6	0	-	-	11.2	58	30.8	0	-	-	
Totals %	2.2	19	2.5	0	-	23.8	3.4	12.3	4	0	-	19.7	2.3	15.1	3.7	0	-	21	4	20.6	10.9	0	-	35.5	
PHF	0.93	0.86	0.69	0	0	0.87	0.85	0.87	0.78	0.25	0	0.85	0.76	0.95	0.82	0	0	0.96	0.9	0.89	0.82	0	0	0.9	0.91
Cars	61	528	69	0	0	658	86	331	112	1	0	530	62	411	104	0	0	577	112	574	302	0	0	988	2753
% Cars	96.8	98.1	95.8	0	0	97.8	90.5	95.4	99.1	100	0	95.3	96.9	96.5	99	0	0	97	100	98.6	97.7	0	0	98.5	97.4
Trucks	2	10	3	0	0	15	9	16	1	0	0	26	2	15	1	0	0	18	0	8	7	0	0	15	74
% Trucks	3.2	1.9	4.2	0	0	2.2	9.5	4.6	0.9	0	0	4.7	3.1	3.5	1	0	0	3	0	1.4	2.3	0	0	1.5	2.6
Bicycles	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	0

Peak Hour Diagram

Specified Period

From: 16:00:00
To: 18:00:00

One Hour Peak

From: 16:30:00
To: 17:30:00

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
Site Code: 2445400003
Count Date: Oct 22, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Burnhamthorpe Rd W runs E/W

North Approach

	Out	In	Total
	458	798	1256
	5	13	18
	0	0	0
Totals	463	811	1274

Ninth Line

	0	0	0	0
	2	2	1	0
	87	319	52	0
Totals	89	321	53	0

East Approach

	Out	In	Total
	981	788	1769
	6	8	14
	0	0	0
Totals	987	796	1783

William Halton Pkwy

				Totals
	0	0	0	0
	0	1	70	71
	0	6	454	460
	0	18	180	198

Peds: 0

Peds: 0



Peds: 0

Burnhamthorpe Rd W

Totals			
0	0	0	0
97	95	2	0
832	828	4	0
58	58	0	0

Peds: 0

West Approach

	Out	In	Total
	704	1315	2019
	25	13	38
	0	0	0
Totals	729	1328	2057

Totals				
407	400	633	282	0
7	10	1	1	
0	0	0	0	

Ninth Line

South Approach

	Out	In	Total
	1315	557	1872
	19	21	40
	0	0	0
Totals	1334	578	1912

- Cars

- Trucks

- Bicycles

Comments



Peak Hour Summary

Intersection: Ninth Line & William Halton Pkwy - Burnhamthorpe Rd W
 Site Code: 2445400003
 Count Date: Oct 22, 2024
 Period: 16:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Ninth Line						South Approach Ninth Line						East Approach Burnhamthorpe Rd W						West Approach William Halton Pkwy						Total Vehic es
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
16:30	10	77	25	0	0	112	102	175	69	0	0	346	20	193	18	0	0	231	13	91	61	0	0	165	854
16:45	12	93	16	0	0	121	100	142	74	0	0	316	19	207	18	0	0	244	14	116	43	0	0	173	854
17:00	18	84	27	0	0	129	103	146	56	0	0	305	9	212	24	0	0	245	23	124	51	0	0	198	877
17:15	13	67	21	0	0	101	102	180	84	1	0	367	10	220	37	0	0	267	21	129	43	0	0	193	928
Grand Total	53	321	89	0	0	463	407	643	283	1	0	1334	58	832	97	0	0	987	71	460	198	0	0	729	3513
Approach %	11.4	69.3	19.2	0	-	-	30.5	48.2	21.2	0.1	-	-	5.9	84.3	9.8	0	-	-	9.7	63.1	27.2	0	-	-	
Totals %	1.5	9.1	2.5	0	13.2		11.6	18.3	8.1	0	38		1.7	23.7	2.8	0	28.1		2	13.1	5.6	0	20.8		
PHF	0.74	0.86	0.82	0	0.9		0.99	0.89	0.84	0.25	0.91		0.73	0.95	0.66	0	0.92		0.77	0.89	0.81	0	0.92	0.95	
Cars	52	319	87	0	458		400	633	282	0	1315		58	828	95	0	981		70	454	180	0	704	3458	
% Cars	98.1	99.4	97.8	0	98.9		98.3	98.4	99.6	0	98.6		100	99.5	97.9	0	99.4		98.6	98.7	90.9	0	96.6	98.4	
Trucks	1	2	2	0	5		7	10	1	1	19		0	4	2	0	6		1	6	18	0	25	55	
% Trucks	1.9	0.6	2.2	0	1.1		1.7	1.6	0.4	100	1.4		0	0.5	2.1	0	0.6		1.4	1.3	9.1	0	3.4	1.6	
Bicycles	0	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	0		0	0	0	0	0		0	0	0	0	0	0	
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	



Date: 2-Jun-21

Intersection: Trafalgar Road & Burnhamthorpe Road

8 Phase Basic Timing Sheet

	1	2	3	4	5	6	7	8	2 Ped	4 Ped	6 Ped	8 Ped
Phases in use	x	x	X	x		x		x				
Direction	SBLT	NB	WBLT	EB		SB		WB				
Min Green	7	20	7	10		20		10				
Veh Ext.	3.0	5.0	3.0	3.0		5.0		3.0				
Yellow	3	4.6	3	3.7		4.6		3.7				
Red	1	1.4	1	2.3		1.4		2.3				
Walk	-	-	-	-		-		-				
Don't Walk	-	-	-	-		-		-				
Max 1	15	45		30		60		30				
Max 2												
Max 3												
Veh Recall												
Ped Recall												
Notes:												

<p>Pattern 1 Time: 6:00 Cycle Length: 120 Offset (%): 0%</p> <table border="1"> <thead> <tr> <th>Direction</th> <th>SBLT</th> <th>NB</th> <th>WBLT</th> <th>EB</th> </tr> </thead> <tbody> <tr> <td>Phase 1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>17</td> <td>41</td> <td>0</td> <td>42</td> </tr> <tr> <th>Direction</th> <th>SBLT</th> <th>SB</th> <th>WBLT</th> <th>WB</th> </tr> <tr> <td>Phase 5</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>58</td> <td>0</td> <td>42</td> </tr> </tbody> </table>	Direction	SBLT	NB	WBLT	EB	Phase 1	1	2	3	4	%	17	41	0	42	Direction	SBLT	SB	WBLT	WB	Phase 5	5	6	7	8	%	0	58	0	42	<p>Pattern 2 Time: 10:00 Cycle Length: 110 Offset (%): 0%</p> <table border="1"> <thead> <tr> <th>Direction</th> <th>SBLT</th> <th>NB</th> <th>WBLT</th> <th>EB</th> </tr> </thead> <tbody> <tr> <td>Phase 1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>10</td> <td>60</td> <td></td> <td>30</td> </tr> <tr> <th>Direction</th> <th>SBLT</th> <th>SB</th> <th>WBLT</th> <th>WB</th> </tr> <tr> <td>Phase 5</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td></td> <td>70</td> <td></td> <td>30</td> </tr> </tbody> </table>	Direction	SBLT	NB	WBLT	EB	Phase 1	1	2	3	4	%	10	60		30	Direction	SBLT	SB	WBLT	WB	Phase 5	5	6	7	8	%		70		30
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Phase 1	1	2	3	4																																																									
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%	0	58	0	42																																																									
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<p>Pattern 3 Time: 15:00 Cycle Length: 120 Offset (%): 0%</p> <table border="1"> <thead> <tr> <th>Direction</th> <th>SBLT</th> <th>NB</th> <th>WBLT</th> <th>EB</th> </tr> </thead> <tbody> <tr> <td>Phase 1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>13</td> <td>55</td> <td>0</td> <td>32</td> </tr> <tr> <th>Direction</th> <th>SBLT</th> <th>SB</th> <th>WBLT</th> <th>WB</th> </tr> <tr> <td>Phase 5</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>68</td> <td>0</td> <td>32</td> </tr> </tbody> </table>	Direction	SBLT	NB	WBLT	EB	Phase 1	1	2	3	4	%	13	55	0	32	Direction	SBLT	SB	WBLT	WB	Phase 5	5	6	7	8	%	0	68	0	32	<p>Pattern 4 Time: Fridays, 12:30 to 15:30 Cycle Length: 110 Offset (%): 0%</p> <table border="1"> <thead> <tr> <th>Direction</th> <th>SBLT</th> <th>NB</th> <th>WBLT</th> <th>EB</th> </tr> </thead> <tbody> <tr> <td>Phase 1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td>13</td> <td>42</td> <td>13</td> <td>32</td> </tr> <tr> <th>Direction</th> <th>SBLT</th> <th>SB</th> <th>WBLT</th> <th>WB</th> </tr> <tr> <td>Phase 5</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td>0</td> <td>55</td> <td>0</td> <td>45</td> </tr> </tbody> </table>	Direction	SBLT	NB	WBLT	EB	Phase 1	1	2	3	4	%	13	42	13	32	Direction	SBLT	SB	WBLT	WB	Phase 5	5	6	7	8	%	0	55	0	45
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%	0	55	0	45																																																									
<p>Pattern 5 Time: 22:00 Cycle Length: Local Offset (%):</p> <table border="1"> <thead> <tr> <th>Direction</th> <th>SBLT</th> <th>NB</th> <th>WBLT</th> <th>EB</th> </tr> </thead> <tbody> <tr> <td>Phase 1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Direction</th> <th>SBLT</th> <th>SB</th> <th>WBLT</th> <th>WB</th> </tr> <tr> <td>Phase 5</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Direction	SBLT	NB	WBLT	EB	Phase 1	1	2	3	4	%					Direction	SBLT	SB	WBLT	WB	Phase 5	5	6	7	8	%					<p>Pattern 6 Time: Cycle Length: Offset (%):</p> <table border="1"> <thead> <tr> <th>Direction</th> <th>SBLT</th> <th>NB</th> <th>WBLT</th> <th>EB</th> </tr> </thead> <tbody> <tr> <td>Phase 1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>%</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>Direction</th> <th>SBLT</th> <th>SB</th> <th>WBLT</th> <th>WB</th> </tr> <tr> <td>Phase 5</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>%</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Direction	SBLT	NB	WBLT	EB	Phase 1	1	2	3	4	%					Direction	SBLT	SB	WBLT	WB	Phase 5	5	6	7	8	%				
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Appendix D

Background Development Excerpts

Rampen Holdings Inc.

For the purposes of this assessment and consistent with other background traffic impact studies prepared for other developments in the area, the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE) and 2016 TTS information will be utilized in this Study.

5.2. Non-auto Modal Split

As the majority of the area north of Dundas Street E is still under construction, the 2016 Transportation Tomorrow Survey data for existing traffic zones north of Dundas Street will not be representative. For these reasons, the traffic zones located south of Dundas Street E will be selected for analysis as these are stable communities. **Table 5** summarizes the travel mode split information based on the review of the 2016 Transportation Tomorrow Survey data for Traffic Zones 4033 and 4035. The 2016 TTS data extraction is included in **Appendix E**.

Table 6 – Modal Split based on 2016 TTS Data for Traffic Zones

Time	Trips Made by Traffic Zones				
	Auto Driver	Auto Passenger	Transit	Cycle	Walk
AM Peak Period (6:00AM – 9:00AM)	68%	17%	7%	0%	8%
PM Peak Period (4:00PM – 7:00PM)	74%	17%	8%	0%	1%

Based on the information above, the non-auto mode of transportation (transit + walking + carpooling) accounts for near 32% during the morning peak period and 26% during the afternoon peak period. Although this is a great trend, however, the auto driver mode is still very high, which is not sustainable and does not meet the sustainable objective of the Town Official Plan policies and directions. In addition, there is none or very little bicycle trips, despite there are existing cycling facilities.

NexTrans’ review of the background traffic impact studies, especially the GHD report, and understands that the Regional staff would support some non-auto modal split for the area, potentially 10% transit, 5% active transportation and 3% transportation demand management. This was stated in the terms of reference prepared by GHD for the Joshua Creek Phase 3. However, to be conservative, **NexTrans has not used this modal split in the trip generation analysis**. Therefore, both of these provisions will address the Town’s comment to verify that the Regional staff support 18% modal split for the area.

5.3. Sit Trip Generation

The ITE Trip Generation Manual 11th Edition Land Use Codes (LUC) 201 “Single-Family Detached Housing General Urban/Suburban” and LUC 215 “Single-Family Attached Housing General Urban/Suburban” fitted curve equations have been utilized for the proposed development. The site trip generation is summarized in **Table 6**.

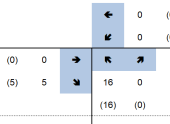
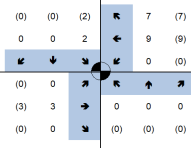
Table 7 – Site Traffic Trip Generation Based on ITE Trip Rates (11th Edition)

ITE Land Use	Magnitude (units)	Parameters	Morning Peak Hour			Afternoon Peak Hour		
			In	Out	Total	In	Out	Total
Single-Family Detached Housing LUC 210 General Urban/Suburban	132	Trip Rates AM - $\ln(T) = 0.91 \cdot \ln(X) + 0.12$ PM - $\ln(T) = 0.94 \cdot \ln(X) + 0.27$	0.19	0.54	0.73	0.62	0.36	0.98
		Sub-Total Trips	25	71	96	81	48	129
Single-Family Attached Housing LUC 215 General Urban/Suburban	56	Trip Rates AM - $T = 0.52 \cdot (X) - 5.70$ PM - $T = 0.60 \cdot (X) - 3.93$	0.13	0.28	0.41	0.31	0.23	0.54
		Sub-Total Trips	7	16	23	17	13	30
Total Trips			32	87	119	98	61	159

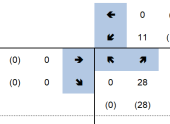
Based on the analysis noted above, the proposed development is expected to generate a total of 119 two-way auto trips (33 inbound and 87 outbound) and 159 two-way auto trips (98 inbound and 61 outbound) during the morning and afternoon peak hours, respectively.

Burnhamthorpe Road East

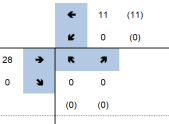
Trafalgar Road



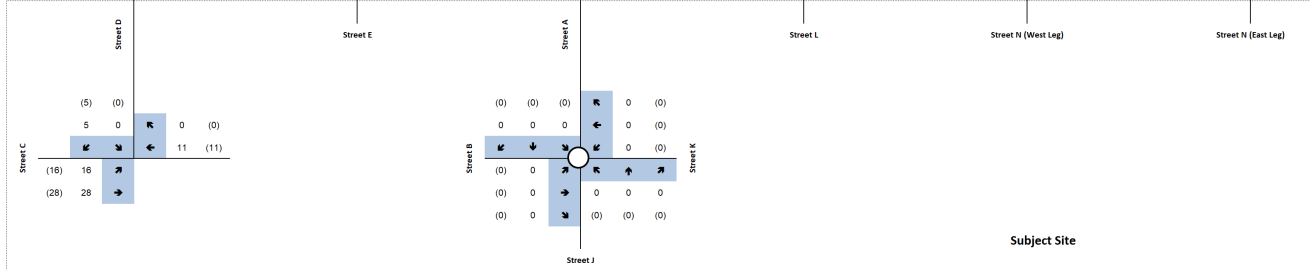
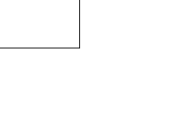
Street E



Street L



Street N (East Leg)

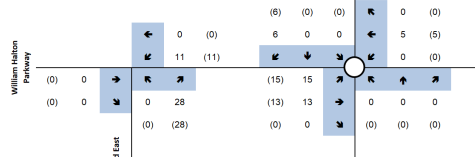


Subject Site

LEGEND
 XX AM Peak Hour Volumes
 (XX) PM Peak Hour Volumes
 ◀▶ Traffic Signal
 ○ Roundabout



Ninth Line



William Nelson Parkway

Burnhamthorpe Road East

Joshua Creek Phase 3

5. Site Generated Traffic

5.1 Site Traffic Generation

The proposed Joshua Creek Phase 3 residential development consists of a total of 709 Single Detached units, 306 Townhouse units, and a 700-student elementary school. The development generated traffic was estimated using the rates provided in the Institute of Transportation Engineer’s (ITE) Trip Generation Manual, 11th Edition using Land Use Code (LUC) 210 (Single-Family Detached Housing for the Single Detached units and LUC 215 (Single-Family Attached Housing) for the Townhouse units.

Consistent with other traffic studies completed in the areas, Region of Halton staff confirmed that a 10% mode split could be assumed for the transit modal split, 5% for active transportation and 3% for Transportation Demand Management (TDM) in the area for the 2027 planning horizon. As a result, an 18% total mode split reduction was applied to all residential inbound and outbound site generated traffic during both peak hours from the calculated site trips estimated by the ITE trip rates.

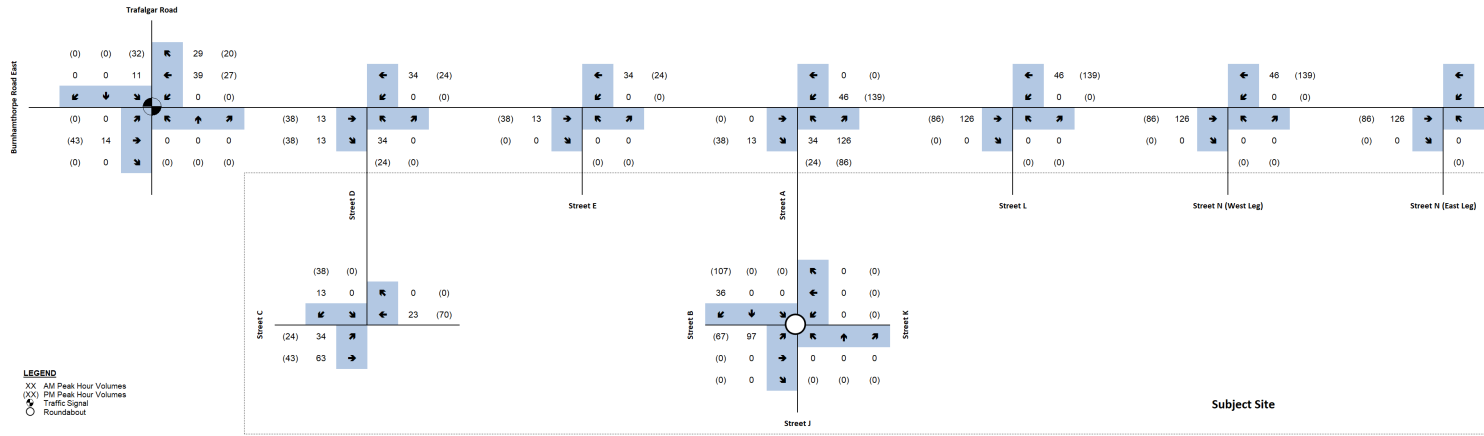
No reduction was applied for the elementary school as most trips will be local. A comparison of the fitted curve equations and average rates for each individual Land Use Code was completed, therefore whichever calculation resulted in a greater trip generation was applied as a conservative measure.

Table 5-1 below summarizes the estimated trip generation for the subject site.

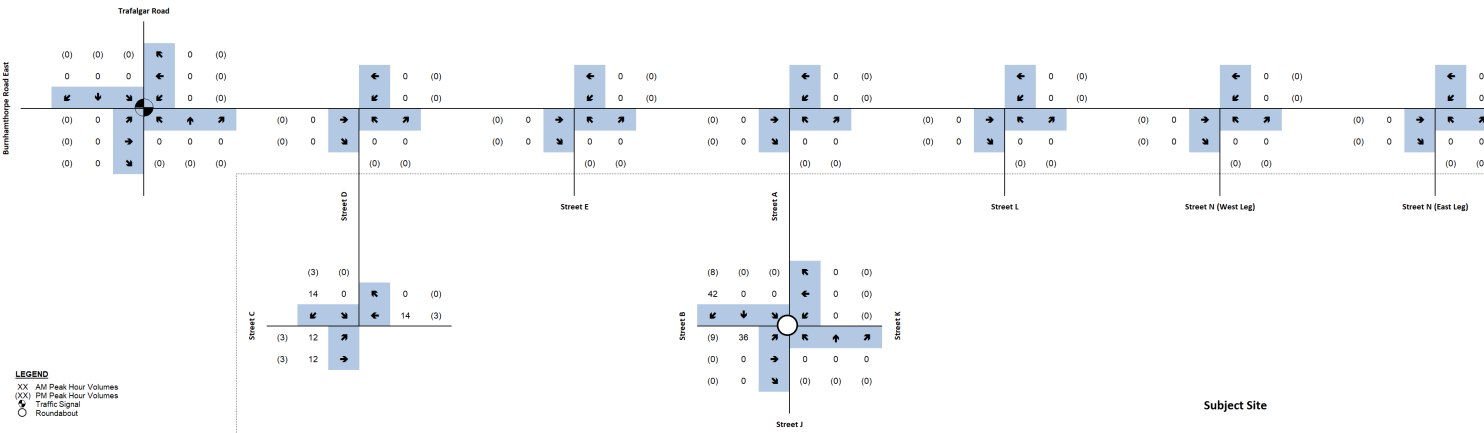
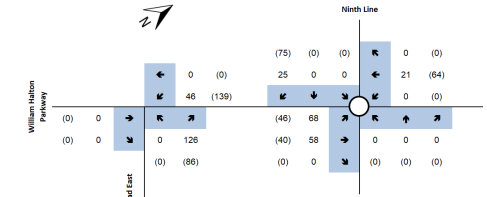
Table 5-1 Estimated Joshua Creek Phase 3 Site Trips

Land Uses	GFA (Dwelling Units)	Parameters	Peak Hour					
			Weekday AM			Weekday PM		
			In	Out	Total	In	Out	Total
Single Family Detached (LUC 210)	709 units	Trip Ratio	26%	74%	100%	63%	37%	100%
		Gross Trips	129	367	496	420	246	666
		Total Mode Split Reduction (18%)	23	66	89	76	44	120
		Total New Trips	106	301	407	344	202	546
Single Family Attached (LUC 215)	306 units	Trip Ratio	31%	69%	100%	57%	43%	100%
		Gross Trips	46	107	153	103	77	180
		Total Mode Split Reduction (18%)	9	19	28	18	14	32
		Total New Trips	37	88	125	85	63	148
Elementary School (LUC 520)	700 Students	Trip Ratio	54%	46%	100%	46%	54%	100%
		Gross Trips	280	238	518	52	60	112
		Total Mode Split Reduction (0%)	0	0	0	0	0	0
		Total New Trips	280	238	518	52	60	112
Total Primary Trips			423	627	1050	481	325	806

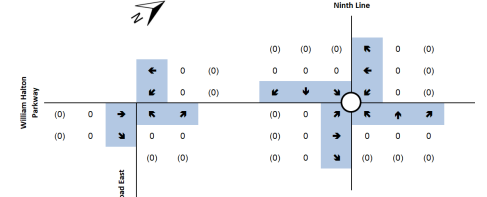
The proposed subdivision is expected to generate a total of 1050 new two-way trips consisting of 423 inbound and 627 outbound trips during weekday a.m. peak hour and 806 new two-way trips consisting of 81 inbound and 325 outbound trips during the weekday p.m. peak hour.



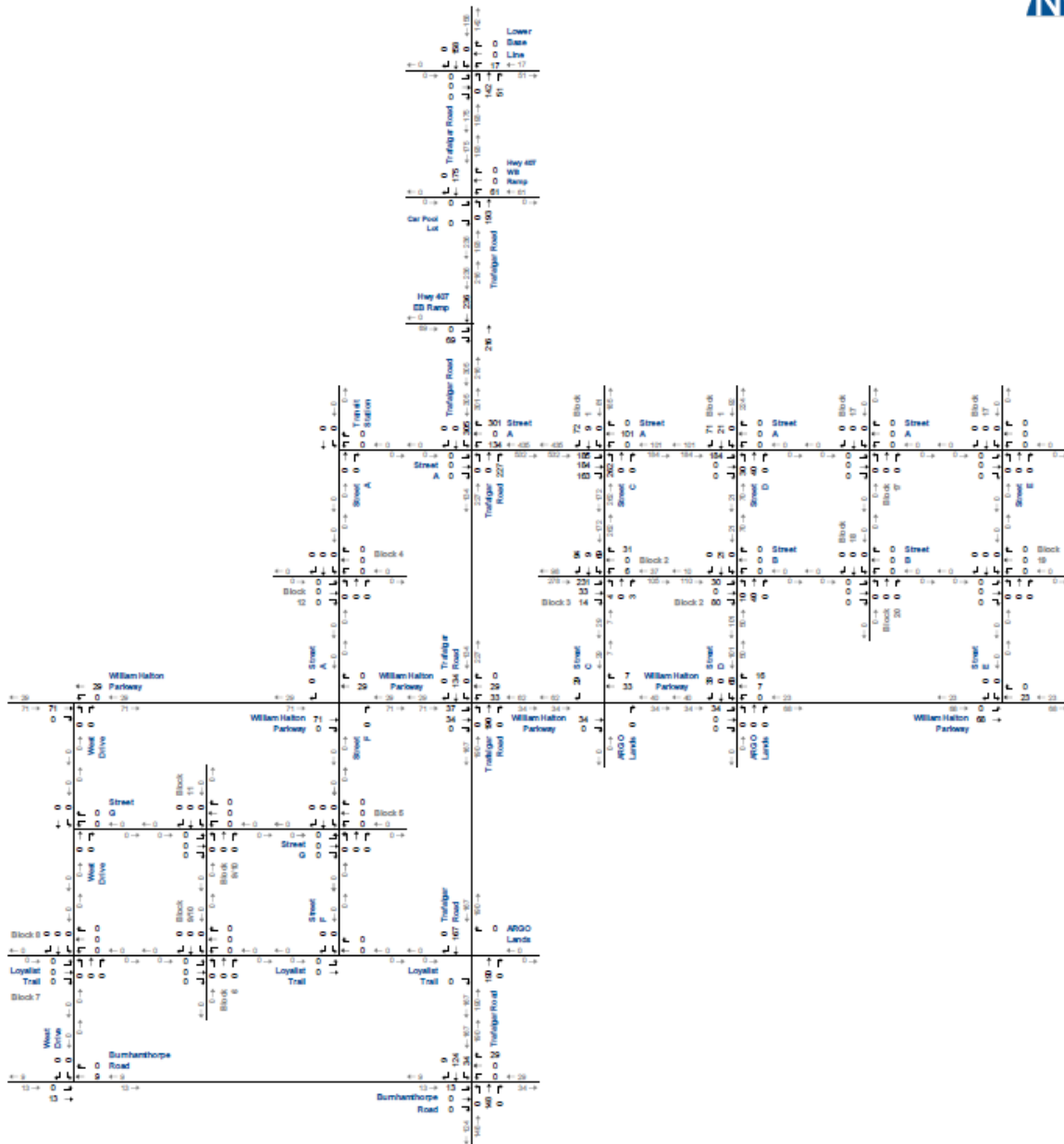
Joshua Creek Phase 3 – Residential Trips



Joshua Creek Phase 3 – School Trips



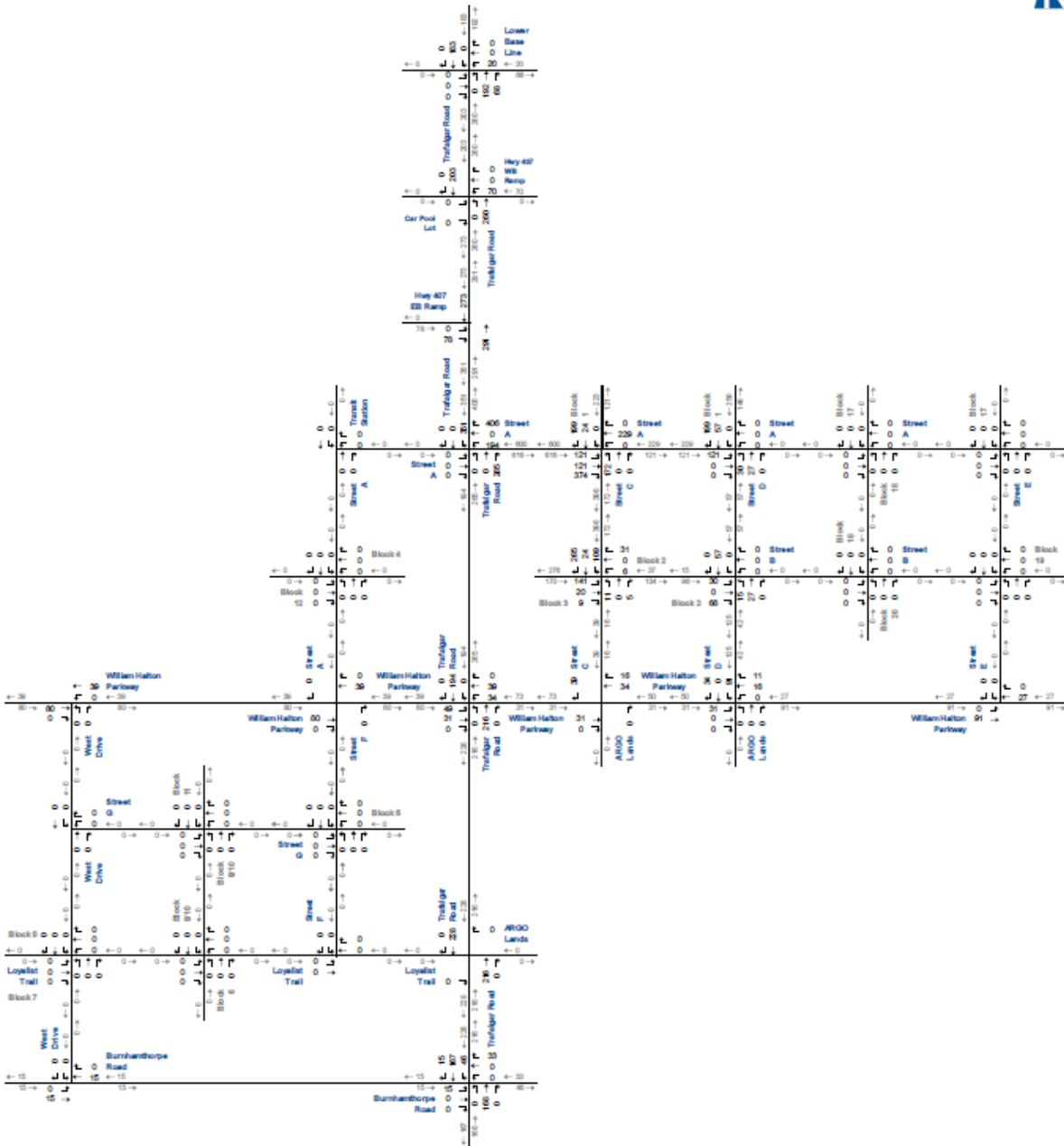
4233, 4040 and 4180 Trafalgar Road



2031 Site Generated Traffic Volumes AM Peak Hour

IO Trafalgar & 407 Oakville, ON TIS
210156/210157

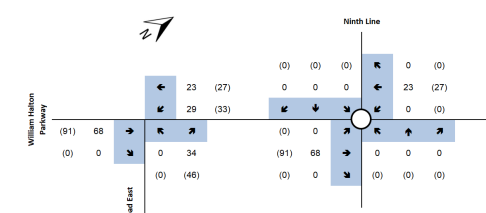
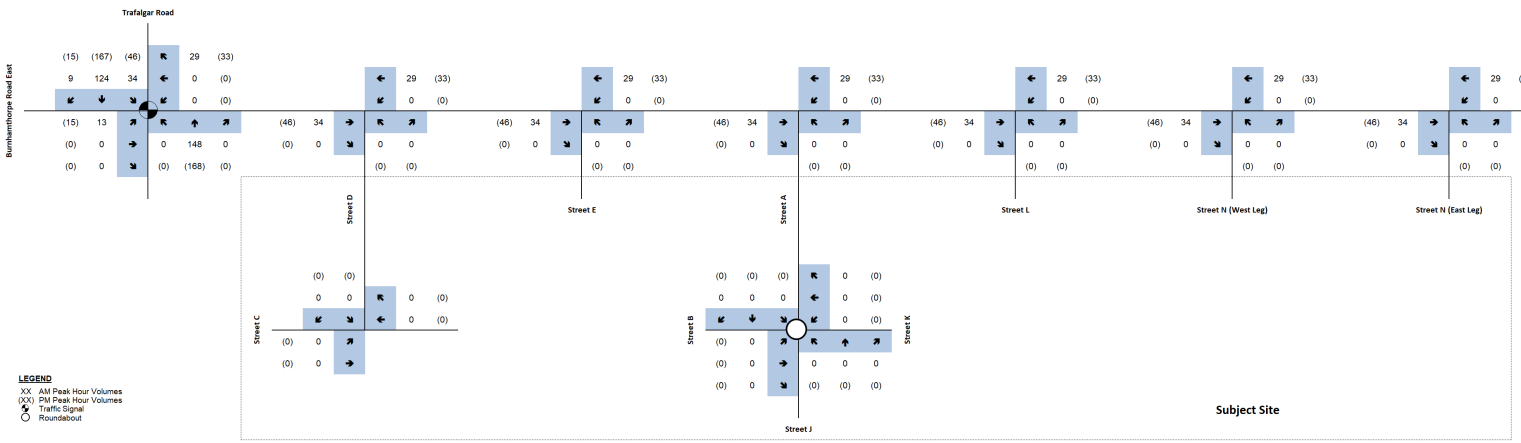
Figure 3.2A



2031 Site Generated Traffic Volumes PM Peak Hour

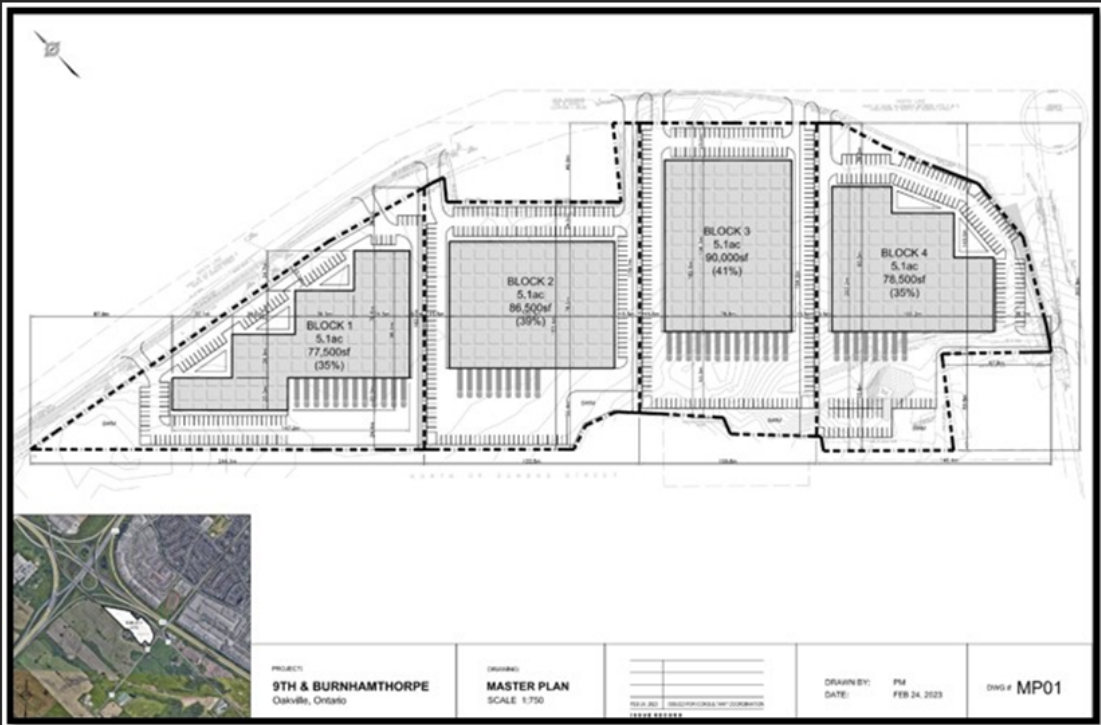
10 Trafalgar & 407 Oakville, ON TIS
210156/210157

Figure 3.2B



**NW quadrant of Burnhamthorpe Road &
Ninth Line (East Parcel)**

❖ Description: Proposed 4 employment/industrial office buildings, total GFA of 30,890 m²

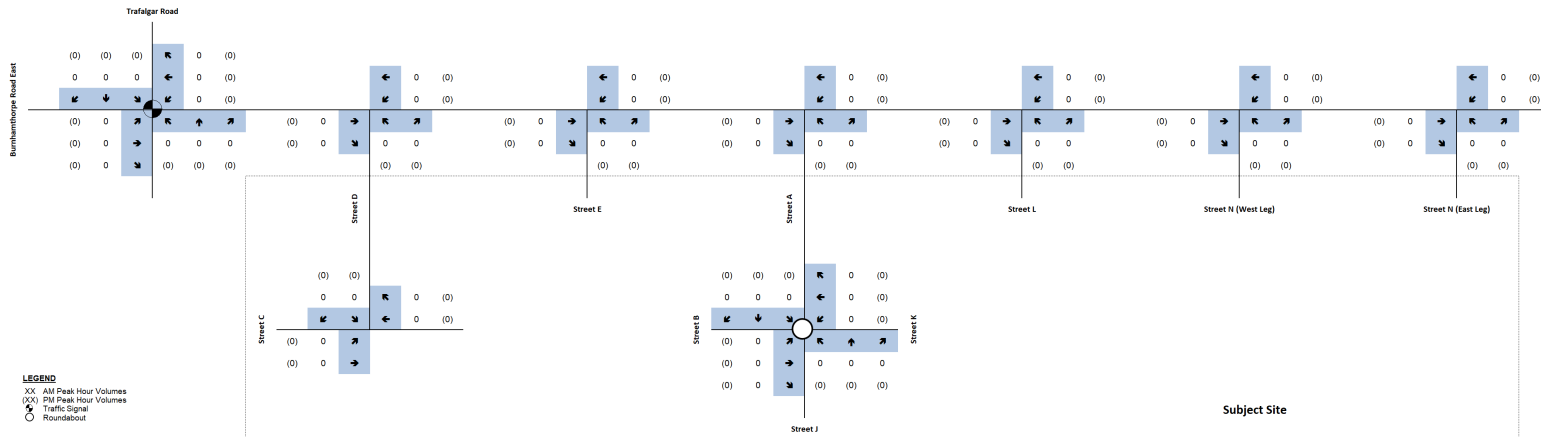


NW Quadrant WHP/9th (East)

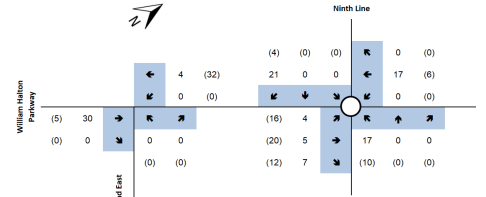
AM	Land Use	Industrial Park				
	GFA	332				
	Land Use Code	130 AM Peak of Adjacent Street Traffic, 1Hr 7-9				
	Eqn	NOT GIVEN		ITE 11th		
	IN	81%		Avg. Rate	0.34	
	Out	19%				
	Pass by	0%				
	Internal	0%				
	Transit Reduction (In)	8%				
	Transit Reduction (Out)	0%				
	Source ITE	IN	OUT	Total	Avg	Eqn
	Gross	92	21	113	113	
	Gross Rate	0.277	0.063	0.340		
	Pass By	0	0	0		
	Internal	0	0	0		
	Transit Reduction	7	0	7		
	New Rate	85	21	106		
		0.256	0.063	0.319		

NW Quadrant WHP/9th (East)

PM	Land Use	Industrial Park				
	GFA	332				
	Land Use Code	130 PM Peak of Adjacent Street Traffic, 1Hr 4-6				
	Eqn	NOT GIVEN		ITE 11th		
	IN	22%		Avg. Rate	0.34	
	Out	78%				
	Pass by	0%				
	Internal	0%				
	Transit Reduction (In)	4%				
	Transit Reduction (Out)	9%				
	Source ITE	IN	OUT	Total	Avg	Eqn
	Gross	25	88	113	113	
	Gross Rate	0.075	0.265	0.340		
	Pass By	0	0	0		
	Internal	0	0	0		
	Transit Reduction	1	8	9		
	New Rate	24	80	104		
		0.072	0.241	0.313		



LEGEND
 XX AM Peak Hour Volumes
 (XX) PM Peak Hour Volumes
 T Traffic Signal
 R Roundabout



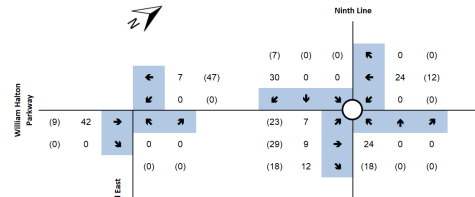
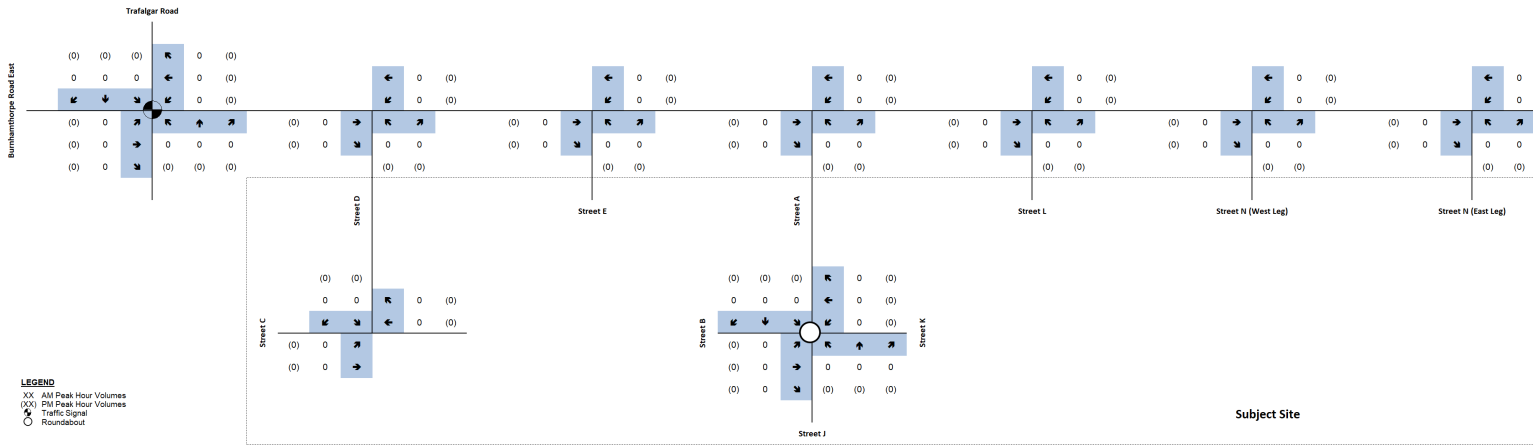
**NW quadrant of Burnhamthorpe Road &
Ninth Line (West Parcel)**

❖ Description: To permit and construct two industrial warehouse buildings (84,066m²),



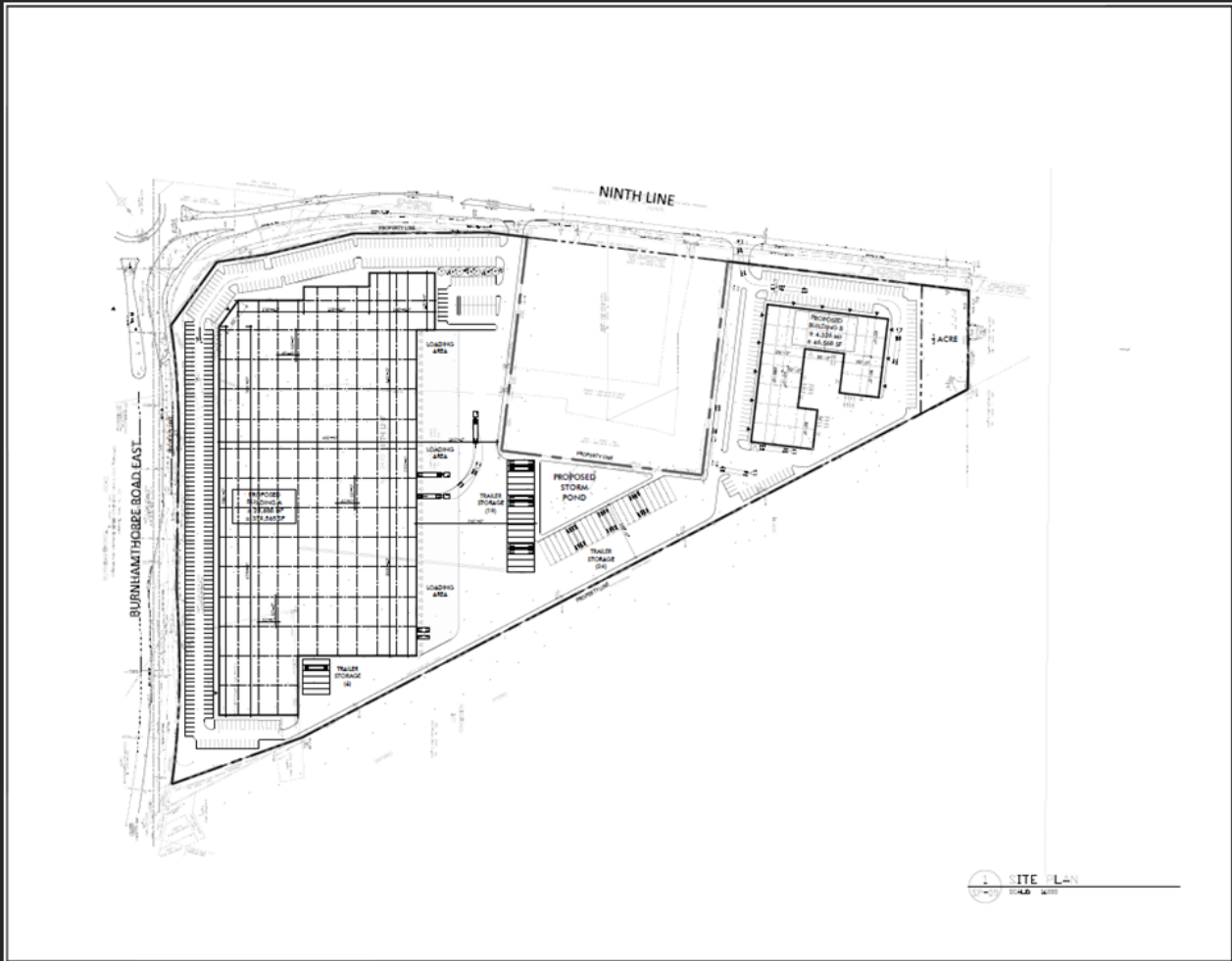
NW Quadrant WHP/9th (West)						
AM	Land Use	Warehousing				
	1000 Sq. Ft. GFA	905				
	Land Use Code	150 AM Peak of Adjacent Street Traffic, 1Hr 7-9				
	Eqn	T = 0.12(X) + 23.62		ITE 11th		
	IN	77%		Avg. Rate	0.17	
	Out	23%				
	Pass by	0%				
	Internal	0%				
	Transit Reduction	0%				
	Source ITE	IN	OUT	Total	Avg	Eqn
	Gross	119	35	154	154	132
	Gross Rate	0.132	0.038	0.170		
	Pass By	0	0	0		
	Internal	0	0	0		
	Transit Reduction	0	0	0		
	New Rate	119	35	154		
		0.132	0.038	0.170		

NW Quadrant WHP/9th (West)						
PM	Land Use	Warehousing				
	1000 Sq. Ft. GFA	905				
	Land Use Code	150 PM Peak of Adjacent Street Traffic, 1Hr 4-6				
	Eqn	T = 0.12(X) + 26.48		ITE 11th		
	IN	28%		Avg. Rate	0.18	
	Out	72%				
	Pass by	0%				
	Internal	0%				
	Transit Reduction	0%				
	Source ITE	IN	OUT	Total	Avg	Eqn
	Gross	46	117	163	163	135
	Gross Rate	0.051	0.129	0.180		
	Pass By	0	0	0		
	Internal	0	0	0		
	Transit Reduction	0	0	0		
	New Rate	46	117	163		
		0.051	0.129	0.180		



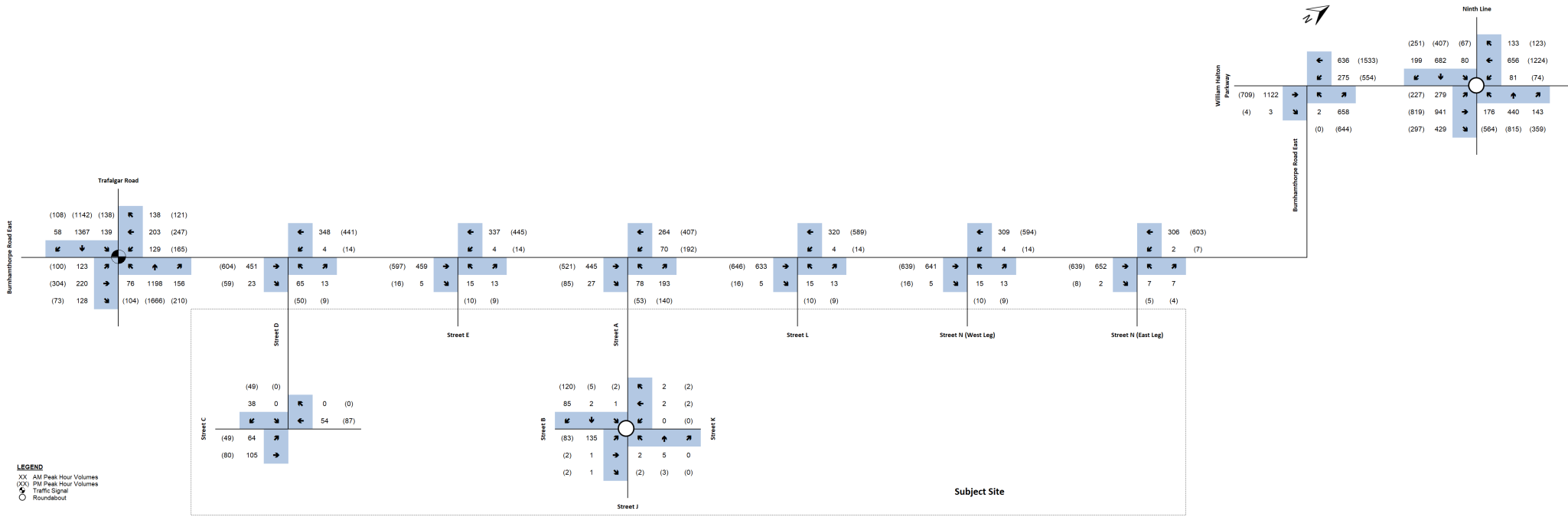
**SW quadrant Burnhamthorpe Road West/
William Halton Parkway/Ninth Line
intersection**

❖ Description: To permit and construct two industrial warehouse buildings (35,000 m2), located in the southwest quadrant of the Burnhamthorpe Rd W / William Halton Parkway / Ninth Line intersection.



SW Quadrant WHP/9th (West)						
AM	Land Use	Warehousing				
	1000 Sq. Ft. GFA	377				
	Land Use Code	150 AM Peak of Adjacent Street Traffic, 1Hr 7-9				
	Eqn	$T = 0.12(X) + 23.62$		ITE 11th		
	IN	77%		Avg. Rate	0.17	
	Out	23%				
	Pass by	0%				
	Internal	0%				
	Transit Reduction	0%				
	Source ITE	IN	OUT	Total	Avg	Eqn
	Gross	53	16	69	64	69
	Gross Rate	0.141	0.042	0.183		
	Pass By	0	0	0		
	Internal	0	0	0		
	Transit Reduction	0	0	0		
	New	53	16	69		
	Rate	0.141	0.042	0.183		

SW Quadrant WHP/9th (West)						
PM	Land Use	Warehousing				
	1000 Sq. Ft. GFA	377				
	Land Use Code	150 PM Peak of Adjacent Street Traffic, 1Hr 4-6				
	Eqn	$T = 0.12(X) + 26.48$		ITE 11th		
	IN	28%		Avg. Rate	0.18	
	Out	72%				
	Pass by	0%				
	Internal	0%				
	Transit Reduction	0%				
	Source ITE	IN	OUT	Total	Avg	Eqn
	Gross	20	52	72	68	72
	Gross Rate	0.053	0.138	0.191		
	Pass By	0	0	0		
	Internal	0	0	0		
	Transit Reduction	0	0	0		
	New	20	52	72		
	Rate	0.053	0.138	0.191		

























Appendix E

Synchro Outputs

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Existing 2024
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	119	85	70	57	37	60	828	117	68	980	39
Future Volume (vph)	73	119	85	70	57	37	60	828	117	68	980	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.938			0.941			0.981			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1773	0	1807	1715	0	1772	3447	0	1825	3458	0
Flt Permitted	0.693			0.571			0.267			0.188		
Satd. Flow (perm)	1331	1773	0	1086	1715	0	498	3447	0	361	3458	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			31			15			5	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%
Adj. Flow (vph)	77	125	89	74	60	39	63	872	123	72	1032	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	214	0	74	99	0	63	995	0	72	1073	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

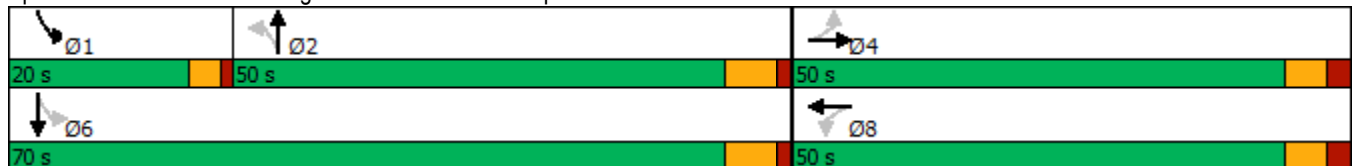
Existing 2024
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.0	26.0		11.0	26.0	
Total Split (s)	50.0	50.0		50.0	50.0		50.0	50.0		20.0	70.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		41.7%	41.7%		16.7%	58.3%	
Maximum Green (s)	44.0	44.0		44.0	44.0		44.0	44.0		16.0	64.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effect Green (s)	14.1	14.1		14.1	14.1		32.0	32.0		42.5	40.3	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.48	0.48		0.63	0.60	
v/c Ratio	0.28	0.54		0.33	0.26		0.27	0.60		0.18	0.52	
Control Delay	28.9	28.1		30.7	20.9		15.4	15.1		5.8	8.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.9	28.1		30.7	20.9		15.4	15.1		5.8	8.4	
LOS	C	C		C	C		B	B		A	A	
Approach Delay		28.3			25.1			15.1			8.3	
Approach LOS		C			C			B			A	

Intersection Summary

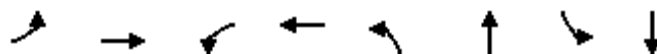
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	67.2
Natural Cycle:	55
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	14.3
Intersection LOS:	B
Intersection Capacity Utilization	84.8%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E



Queues
1: Trafalgar Road & Burnhamthorpe Road E

Existing 2024
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	214	74	99	63	995	72	1073
v/c Ratio	0.28	0.54	0.33	0.26	0.27	0.60	0.18	0.52
Control Delay	28.9	28.1	30.7	20.9	15.4	15.1	5.8	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	28.1	30.7	20.9	15.4	15.1	5.8	8.4
Queue Length 50th (m)	8.4	20.6	8.2	7.3	4.7	46.7	2.8	33.6
Queue Length 95th (m)	22.6	47.3	22.5	21.9	14.2	74.7	7.9	57.1
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		60.0		60.0	
Base Capacity (vph)	916	1231	747	1190	342	2377	599	3113
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.17	0.10	0.08	0.18	0.42	0.12	0.34
Intersection Summary								

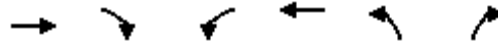
HCM Signalized Intersection Capacity Analysis
1: Trafalgar Road & Burnhamthorpe Road E

Existing 2024
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	119	85	70	57	37	60	828	117	68	980	39
Future Volume (vph)	73	119	85	70	57	37	60	828	117	68	980	39
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.94		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1772		1807	1715		1772	3449		1825	3459	
Flt Permitted	0.69	1.00		0.57	1.00		0.27	1.00		0.19	1.00	
Satd. Flow (perm)	1331	1772		1087	1715		497	3449		361	3459	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	77	125	89	74	60	39	63	872	123	72	1032	41
RTOR Reduction (vph)	0	27	0	0	25	0	0	8	0	0	2	0
Lane Group Flow (vph)	77	187	0	74	74	0	63	987	0	72	1071	0
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	14.1	14.1		14.1	14.1		32.0	32.0		41.3	41.3	
Effective Green, g (s)	14.1	14.1		14.1	14.1		32.0	32.0		41.3	41.3	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.47	0.47		0.61	0.61	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	278	370		227	358		235	1637		336	2119	
v/s Ratio Prot		c0.11			0.04			c0.29		0.02	c0.31	
v/s Ratio Perm	0.06			0.07			0.13			0.11		
v/c Ratio	0.28	0.51		0.33	0.21		0.27	0.60		0.21	0.51	
Uniform Delay, d1	22.4	23.6		22.6	22.0		10.7	13.0		6.6	7.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	1.1		0.8	0.3		1.3	0.9		0.3	0.4	
Delay (s)	22.9	24.7		23.5	22.3		11.9	14.0		6.9	7.7	
Level of Service	C	C		C	C		B	B		A	A	
Approach Delay (s)		24.2			22.8			13.8			7.7	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay			12.9				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			67.4				Sum of lost time (s)				16.0	
Intersection Capacity Utilization			84.8%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Existing 2024
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	759	2	124	472	1	246
Future Volume (vph)	759	2	124	472	1	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.990		
Satd. Flow (prot)	1902	0	0	1825	1629	0
Fl _t Permitted				0.990		
Satd. Flow (perm)	1902	0	0	1825	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	834	2	136	519	1	270
Shared Lane Traffic (%)						
Lane Group Flow (vph)	836	0	0	655	271	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	97.1%
ICU Level of Service	F
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway























Existing 2024
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	759	2	124	472	1	246
Future Volume (Veh/h)	759	2	124	472	1	246
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	834	2	136	519	1	270
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			836		1626	835
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			836		1626	835
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			83		99	27
cM capacity (veh/h)			785		94	368
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	836	655	271			
Volume Left	0	136	1			
Volume Right	2	0	270			
cSH	1700	785	364			
Volume to Capacity	0.49	0.17	0.75			
Queue Length 95th (m)	0.0	4.7	44.3			
Control Delay (s)	0.0	4.3	38.9			
Lane LOS		A	E			
Approach Delay (s)	0.0	4.3	38.9			
Approach LOS			E			
Intersection Summary						
Average Delay			7.6			
Intersection Capacity Utilization			97.1%	ICU Level of Service	F	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Existing 2024
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	122	48	99	109	33	82	1181	146	31	769	73
Future Volume (vph)	56	122	48	99	109	33	82	1181	146	31	769	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	60.0		0.0	60.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.957			0.965			0.983			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1802	0	1807	1828	0	1789	3522	0	1772	3476	0
Flt Permitted	0.655			0.581			0.321			0.112		
Satd. Flow (perm)	1210	1802	0	1105	1828	0	605	3522	0	209	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			12			16			16	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Adj. Flow (vph)	59	128	51	104	115	35	86	1243	154	33	809	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	179	0	104	150	0	86	1397	0	33	886	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

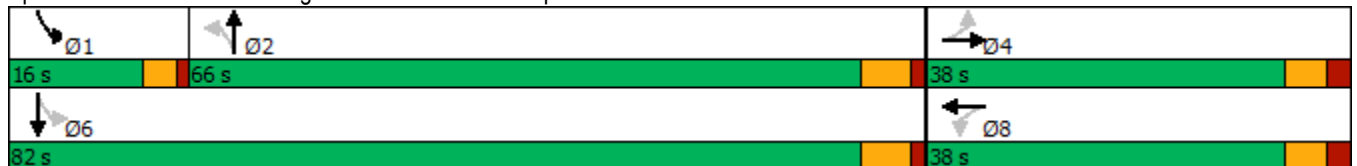
Existing 2024
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.0	26.0		11.0	26.0	
Total Split (s)	38.0	38.0		38.0	38.0		66.0	66.0		16.0	82.0	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		55.0%	55.0%		13.3%	68.3%	
Maximum Green (s)	32.0	32.0		32.0	32.0		60.0	60.0		12.0	76.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	15.0	15.0		15.0	15.0		48.2	48.2		55.8	53.6	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.59	0.59		0.68	0.66	
v/c Ratio	0.27	0.52		0.51	0.43		0.24	0.67		0.11	0.39	
Control Delay	37.4	37.2		45.1	35.7		11.9	14.0		5.1	6.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.4	37.2		45.1	35.7		11.9	14.0		5.1	6.6	
LOS	D	D		D	D		B	B		A	A	
Approach Delay		37.2			39.5			13.9			6.5	
Approach LOS		D			D			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	81.7
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	15.7
Intersection LOS:	B
Intersection Capacity Utilization	79.1%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E



Queues
1: Trafalgar Road & Burnhamthorpe Road E























Existing 2024
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	179	104	150	86	1397	33	886
v/c Ratio	0.27	0.52	0.51	0.43	0.24	0.67	0.11	0.39
Control Delay	37.4	37.2	45.1	35.7	11.9	14.0	5.1	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	37.2	45.1	35.7	11.9	14.0	5.1	6.6
Queue Length 50th (m)	9.3	26.8	17.2	22.3	6.7	79.9	1.3	26.5
Queue Length 95th (m)	21.7	49.9	35.4	42.7	17.7	123.3	4.5	46.5
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		60.0		60.0	
Base Capacity (vph)	515	776	470	785	461	2691	392	3000
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.23	0.22	0.19	0.19	0.52	0.08	0.30
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
1: Trafalgar Road & Burnhamthorpe Road E

Existing 2024
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (vph)	56	122	48	99	109	33	82	1181	146	31	769	73
Future Volume (vph)	56	122	48	99	109	33	82	1181	146	31	769	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1803		1807	1828		1789	3523		1772	3476	
Flt Permitted	0.66	1.00		0.58	1.00		0.32	1.00		0.11	1.00	
Satd. Flow (perm)	1210	1803		1106	1828		604	3523		209	3476	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	59	128	51	104	115	35	86	1243	154	33	809	77
RTOR Reduction (vph)	0	13	0	0	10	0	0	7	0	0	5	0
Lane Group Flow (vph)	59	166	0	104	140	0	86	1390	0	33	881	0
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.0	15.0		15.0	15.0		48.1	48.1		55.6	55.6	
Effective Green, g (s)	15.0	15.0		15.0	15.0		48.1	48.1		55.6	55.6	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.58	0.58		0.67	0.67	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	219	327		200	331		351	2051		206	2339	
v/s Ratio Prot		0.09			0.08			c0.39		0.01	c0.25	
v/s Ratio Perm	0.05			c0.09			0.14			0.10		
v/c Ratio	0.27	0.51		0.52	0.42		0.25	0.68		0.16	0.38	
Uniform Delay, d1	29.1	30.5		30.5	30.0		8.4	11.9		7.7	5.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	1.2		2.4	0.9		0.8	1.2		0.4	0.2	
Delay (s)	29.8	31.7		33.0	30.8		9.2	13.1		8.0	6.1	
Level of Service	C	C		C	C		A	B		A	A	
Approach Delay (s)		31.2			31.7			12.9			6.2	
Approach LOS		C			C			B			A	
Intersection Summary												
HCM 2000 Control Delay			13.9				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			82.6				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			79.1%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Existing 2024
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	473	3	210	1109	0	277
Future Volume (vph)	473	3	210	1109	0	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.992		
Satd. Flow (prot)	1864	0	0	1890	1645	0
Flt Permitted				0.992		
Satd. Flow (perm)	1864	0	0	1890	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	488	3	216	1143	0	286
Shared Lane Traffic (%)						
Lane Group Flow (vph)	491	0	0	1359	286	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	122.2%
ICU Level of Service	H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway























Existing 2024
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Traffic Volume (veh/h)	473	3	210	1109	0	277
Future Volume (Veh/h)	473	3	210	1109	0	277
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	488	3	216	1143	0	286
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			491		2064	490
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			491		2064	490
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			80		100	51
cM capacity (veh/h)			1083		49	581
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	491	1359	286			
Volume Left	0	216	0			
Volume Right	3	0	286			
cSH	1700	1083	581			
Volume to Capacity	0.29	0.20	0.49			
Queue Length 95th (m)	0.0	5.6	20.6			
Control Delay (s)	0.0	6.1	17.1			
Lane LOS		A	C			
Approach Delay (s)	0.0	6.1	17.1			
Approach LOS			C			
Intersection Summary						
Average Delay			6.2			
Intersection Capacity Utilization			122.2%	ICU Level of Service		H
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2031
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	151	108	89	72	76	68	1099	134	112	1249	53
Future Volume (vph)	105	151	108	89	72	76	68	1099	134	112	1249	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.937			0.923			0.984			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1771	0	1807	1690	0	1772	4367	0	1825	4368	0
Flt Permitted	0.658			0.412			0.152			0.105		
Satd. Flow (perm)	1264	1771	0	784	1690	0	284	4367	0	202	4368	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34			50			17			7	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%
Adj. Flow (vph)	111	159	114	94	76	80	72	1157	141	118	1315	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	273	0	94	156	0	72	1298	0	118	1371	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

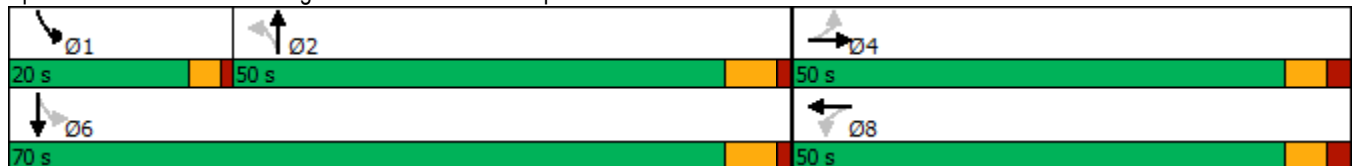
Future Background 2031
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.0	26.0		11.0	26.0	
Total Split (s)	50.0	50.0		50.0	50.0		50.0	50.0		20.0	70.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		41.7%	41.7%		16.7%	58.3%	
Maximum Green (s)	44.0	44.0		44.0	44.0		44.0	44.0		16.0	64.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	17.2	17.2		17.2	17.2		38.5	38.5		52.8	50.8	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.48	0.48		0.66	0.63	
v/c Ratio	0.41	0.67		0.56	0.39		0.53	0.62		0.40	0.50	
Control Delay	33.6	35.0		43.8	22.5		34.4	17.3		9.9	9.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.6	35.0		43.8	22.5		34.4	17.3		9.9	9.0	
LOS	C	D		D	C		C	B		A	A	
Approach Delay		34.6			30.5			18.2			9.1	
Approach LOS		C			C			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	80.3
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	17.0
Intersection LOS:	B
Intersection Capacity Utilization:	84.9%
ICU Level of Service:	E
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E



Queues
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2031
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	111	273	94	156	72	1298	118	1371
v/c Ratio	0.41	0.67	0.56	0.39	0.53	0.62	0.40	0.50
Control Delay	33.6	35.0	43.8	22.5	34.4	17.3	9.9	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	35.0	43.8	22.5	34.4	17.3	9.9	9.0
Queue Length 50th (m)	15.5	35.4	13.6	14.4	7.0	54.9	5.6	40.0
Queue Length 95th (m)	31.4	63.0	30.2	32.1	#30.5	93.6	15.1	69.7
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	712	1013	441	974	160	2468	465	3528
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.27	0.21	0.16	0.45	0.53	0.25	0.39

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2031
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (vph)	105	151	108	89	72	76	68	1099	134	112	1249	53
Future Volume (vph)	105	151	108	89	72	76	68	1099	134	112	1249	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.94		1.00	0.92		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1771		1807	1690		1772	4366		1825	4368	
Flt Permitted	0.66	1.00		0.41	1.00		0.15	1.00		0.10	1.00	
Satd. Flow (perm)	1264	1771		784	1690		284	4366		201	4368	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	111	159	114	94	76	80	72	1157	141	118	1315	56
RTOR Reduction (vph)	0	27	0	0	39	0	0	9	0	0	3	0
Lane Group Flow (vph)	111	246	0	94	117	0	72	1289	0	118	1368	0
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.2	17.2		17.2	17.2		38.5	38.5		50.7	50.7	
Effective Green, g (s)	17.2	17.2		17.2	17.2		38.5	38.5		50.7	50.7	
Actuated g/C Ratio	0.22	0.22		0.22	0.22		0.48	0.48		0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	272	381		168	363		136	2103		294	2771	
v/s Ratio Prot		c0.14			0.07			c0.30		0.04	c0.31	
v/s Ratio Perm	0.09			0.12			0.25			0.21		
v/c Ratio	0.41	0.65		0.56	0.32		0.53	0.61		0.40	0.49	
Uniform Delay, d1	27.0	28.6		28.0	26.4		14.4	15.2		8.2	7.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	3.7		4.0	0.5		6.9	0.8		0.9	0.3	
Delay (s)	28.0	32.3		32.0	26.9		21.3	16.0		9.1	8.1	
Level of Service	C	C		C	C		C	B		A	A	
Approach Delay (s)		31.1			28.8			16.3			8.1	
Approach LOS		C			C			B			A	

Intersection Summary		
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.62	B
Actuated Cycle Length (s)	79.9	Sum of lost time (s)
Intersection Capacity Utilization	84.9%	16.0
Analysis Period (min)	15	ICU Level of Service
		E
c Critical Lane Group		

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2031
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1030	2	171	579	1	346
Future Volume (vph)	1030	2	171	579	1	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.989		
Satd. Flow (prot)	1902	0	0	1823	1629	0
Fl _t Permitted				0.989		
Satd. Flow (perm)	1902	0	0	1823	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1132	2	188	636	1	380
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1134	0	0	824	381	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	125.7%
Analysis Period (min)	15
	ICU Level of Service H

HCM Unsignalized Intersection Capacity Analysis
2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2031
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	1030	2	171	579	1	346
Future Volume (Veh/h)	1030	2	171	579	1	346
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1132	2	188	636	1	380
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1134		2145	1133
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1134		2145	1133
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			69		97	0
cM capacity (veh/h)			605		37	247
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1134	824	381			
Volume Left	0	188	1			
Volume Right	2	0	380			
cSH	1700	605	243			
Volume to Capacity	0.67	0.31	1.57			
Queue Length 95th (m)	0.0	10.0	177.4			
Control Delay (s)	0.0	8.3	310.4			
Lane LOS	A		F			
Approach Delay (s)	0.0	8.3	310.4			
Approach LOS	A		F			
Intersection Summary						
Average Delay			53.5			
Intersection Capacity Utilization			125.7%	ICU Level of Service		H
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2031
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	155	61	125	138	74	94	1524	167	81	1050	98
Future Volume (vph)	86	155	61	125	138	74	94	1524	167	81	1050	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.958			0.948			0.985			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1804	0	1807	1784	0	1789	4457	0	1772	4390	0
Flt Permitted	0.455			0.446			0.185			0.065		
Satd. Flow (perm)	840	1804	0	848	1784	0	348	4457	0	121	4390	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			22			19			21	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Adj. Flow (vph)	91	163	64	132	145	78	99	1604	176	85	1105	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	227	0	132	223	0	99	1780	0	85	1208	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1		6

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

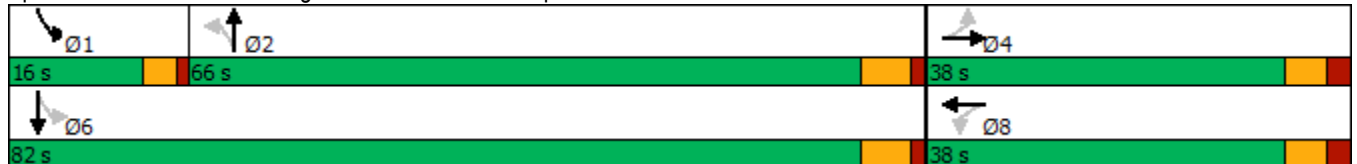
Future Background 2031
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.0	26.0		11.0	26.0	
Total Split (s)	38.0	38.0		38.0	38.0		66.0	66.0		16.0	82.0	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		55.0%	55.0%		13.3%	68.3%	
Maximum Green (s)	32.0	32.0		32.0	32.0		60.0	60.0		12.0	76.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	19.7	19.7		19.7	19.7		57.3	57.3		68.3	66.2	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.58	0.58		0.69	0.67	
v/c Ratio	0.54	0.61		0.78	0.60		0.49	0.68		0.39	0.41	
Control Delay	50.2	41.7		69.2	40.2		27.2	17.8		14.3	8.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.2	41.7		69.2	40.2		27.2	17.8		14.3	8.2	
LOS	D	D		E	D		C	B		B	A	
Approach Delay		44.1			51.0			18.3			8.6	
Approach LOS		D			D			B			A	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 98.5
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 20.2
 Intersection LOS: C
 Intersection Capacity Utilization 79.3%
 ICU Level of Service D
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E

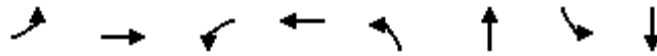


Queues

Future Background 2031

1: Trafalgar Road & Burnhamthorpe Road E

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	227	132	223	99	1780	85	1208
v/c Ratio	0.54	0.61	0.78	0.60	0.49	0.68	0.39	0.41
Control Delay	50.2	41.7	69.2	40.2	27.2	17.8	14.3	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	41.7	69.2	40.2	27.2	17.8	14.3	8.2
Queue Length 50th (m)	16.6	39.0	25.4	37.0	10.7	94.5	4.5	37.0
Queue Length 95th (m)	33.5	64.5	48.2	62.2	37.1	158.7	17.1	65.4
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	285	623	288	621	221	2847	294	3388
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.36	0.46	0.36	0.45	0.63	0.29	0.36
Intersection Summary								

HCM Signalized Intersection Capacity Analysis
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2031
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	155	61	125	138	74	94	1524	167	81	1050	98
Future Volume (vph)	86	155	61	125	138	74	94	1524	167	81	1050	98
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.96		1.00	0.95		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1804		1807	1783		1789	4458		1772	4391	
Flt Permitted	0.46	1.00		0.45	1.00		0.19	1.00		0.07	1.00	
Satd. Flow (perm)	841	1804		849	1783		349	4458		122	4391	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	163	64	132	145	78	99	1604	176	85	1105	103
RTOR Reduction (vph)	0	13	0	0	18	0	0	8	0	0	7	0
Lane Group Flow (vph)	91	214	0	132	205	0	99	1772	0	85	1201	0
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.7	19.7		19.7	19.7		57.3	57.3		67.3	67.3	
Effective Green, g (s)	19.7	19.7		19.7	19.7		57.3	57.3		67.3	67.3	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.58	0.58		0.68	0.68	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	167	358		168	354		201	2580		182	2984	
v/s Ratio Prot		0.12			0.12			c0.40		0.03	c0.27	
v/s Ratio Perm	0.11			c0.16			0.28			0.29		
v/c Ratio	0.54	0.60		0.79	0.58		0.49	0.69		0.47	0.40	
Uniform Delay, d1	35.6	36.1		37.6	35.9		12.3	14.6		11.4	7.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	2.7		21.0	2.4		3.9	1.0		1.9	0.2	
Delay (s)	39.2	38.7		58.7	38.3		16.2	15.6		13.3	7.2	
Level of Service	D	D		E	D		B	B		B	A	
Approach Delay (s)		38.9			45.9			15.6			7.6	
Approach LOS		D			D			B			A	
Intersection Summary												
HCM 2000 Control Delay			17.6				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			99.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			79.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2031
 PM Peak Hour



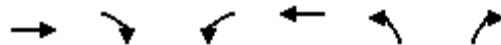
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	652	3	274	1400	0	398
Future Volume (vph)	652	3	274	1400	0	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.992		
Satd. Flow (prot)	1864	0	0	1890	1645	0
Flt Permitted				0.992		
Satd. Flow (perm)	1864	0	0	1890	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	672	3	282	1443	0	410
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	0	1725	410	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	158.0%
	ICU Level of Service H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway






















Future Background 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Traffic Volume (veh/h)	652	3	274	1400	0	398
Future Volume (Veh/h)	652	3	274	1400	0	398
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	672	3	282	1443	0	410
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			675		2680	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			675		2680	674
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			70		100	10
cM capacity (veh/h)			926		17	457
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	675	1725	410			
Volume Left	0	282	0			
Volume Right	3	0	410			
cSH	1700	926	457			
Volume to Capacity	0.40	0.30	0.90			
Queue Length 95th (m)	0.0	9.8	74.7			
Control Delay (s)	0.0	10.6	50.8			
Lane LOS		B	F			
Approach Delay (s)	0.0	10.6	50.8			
Approach LOS			F			
Intersection Summary						
Average Delay			13.9			
Intersection Capacity Utilization			158.0%	ICU Level of Service	H	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Future Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.973			0.949			0.983			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1833	0	1807	1787	0	1789	4448	0	1772	4390	0
Flt Permitted	0.298			0.294			0.185			0.063		
Satd. Flow (perm)	550	1833	0	559	1787	0	348	4448	0	118	4390	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			21			22			21	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Adj. Flow (vph)	91	289	64	147	232	118	99	1604	202	141	1105	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	353	0	147	350	0	99	1806	0	141	1208	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.0	26.0		11.0	26.0	
Total Split (s)	38.0	38.0		38.0	38.0		66.0	66.0		16.0	82.0	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		55.0%	55.0%		13.3%	68.3%	
Maximum Green (s)	32.0	32.0		32.0	32.0		60.0	60.0		12.0	76.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	32.0	32.0		32.0	32.0		59.9	59.9		75.7	73.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.51	0.51		0.64	0.63	
v/c Ratio	0.61	0.70		0.97	0.70		0.56	0.79		0.66	0.44	
Control Delay	57.6	46.5		109.6	45.1		35.6	27.0		35.2	11.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	57.6	46.5		109.6	45.1		35.6	27.0		35.2	11.7	
LOS	E	D		F	D		D	C		D	B	
Approach Delay		48.7			64.2			27.5			14.1	
Approach LOS		D			E			C			B	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 117.7
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 29.8
 Intersection LOS: C
 Intersection Capacity Utilization 86.2%
 ICU Level of Service E
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E

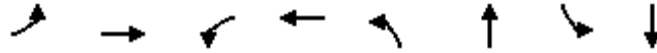


Queues

Future Total 2031

1: Trafalgar Road & Burnhamthorpe Road E

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	353	147	350	99	1806	141	1208
v/c Ratio	0.61	0.70	0.97	0.70	0.56	0.79	0.66	0.44
Control Delay	57.6	46.5	109.6	45.1	35.6	27.0	35.2	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	46.5	109.6	45.1	35.6	27.0	35.2	11.7
Queue Length 50th (m)	18.4	72.0	33.8	68.9	15.2	137.6	15.1	54.7
Queue Length 95th (m)	#42.0	107.2	#76.2	104.2	37.9	165.9	36.1	65.3
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	149	504	152	500	177	2278	244	2842
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.70	0.97	0.70	0.56	0.79	0.58	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Future Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.97		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1832		1807	1788		1789	4449		1772	4391	
Flt Permitted	0.30	1.00		0.29	1.00		0.19	1.00		0.06	1.00	
Satd. Flow (perm)	551	1832		559	1788		349	4449		117	4391	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	289	64	147	232	118	99	1604	202	141	1105	103
RTOR Reduction (vph)	0	7	0	0	15	0	0	11	0	0	8	0
Lane Group Flow (vph)	91	346	0	147	335	0	99	1795	0	141	1200	0
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0		59.9	59.9		73.7	73.7	
Effective Green, g (s)	32.0	32.0		32.0	32.0		59.9	59.9		73.7	73.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.51	0.51		0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	149	498		151	486		177	2264		211	2749	
v/s Ratio Prot		0.19			0.19			c0.40		c0.06	0.27	
v/s Ratio Perm	0.17			c0.26			0.28			0.36		
v/c Ratio	0.61	0.70		0.97	0.69		0.56	0.79		0.67	0.44	
Uniform Delay, d1	37.4	38.5		42.4	38.4		19.8	23.8		25.3	11.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.2	4.2		64.8	4.0		6.4	2.3		7.8	0.2	
Delay (s)	44.6	42.7		107.2	42.4		26.2	26.1		33.1	11.6	
Level of Service	D	D		F	D		C	C		C	B	
Approach Delay (s)		43.1			61.6			26.1			13.8	
Approach LOS		D			E			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			117.7			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			86.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	652	3	529	1400	0	577
Future Volume (vph)	652	3	529	1400	0	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.986		
Satd. Flow (prot)	1864	0	0	1881	1645	0
Flt Permitted				0.986		
Satd. Flow (perm)	1864	0	0	1881	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	672	3	545	1443	0	595
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	0	1988	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	183.2%
ICU Level of Service	H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Traffic Volume (veh/h)	652	3	529	1400	0	577
Future Volume (Veh/h)	652	3	529	1400	0	577
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	672	3	545	1443	0	595
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			675		3206	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			675		3206	674
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			41		100	0
cM capacity (veh/h)			926		5	457
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	675	1988	595			
Volume Left	0	545	0			
Volume Right	3	0	595			
cSH	1700	926	457			
Volume to Capacity	0.40	0.59	1.30			
Queue Length 95th (m)	0.0	30.1	196.9			
Control Delay (s)	0.0	14.3	177.4			
Lane LOS		B	F			
Approach Delay (s)	0.0	14.3	177.4			
Approach LOS			F			
Intersection Summary						
Average Delay			41.1			
Intersection Capacity Utilization			183.2%	ICU Level of Service	H	
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: Street D & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	537	58	14	390	49	9
Future Volume (vph)	537	58	14	390	49	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987			0.979		
Flt Protected				0.998	0.960	
Satd. Flow (prot)	1879	0	0	1917	1806	0
Flt Permitted				0.998	0.960	
Satd. Flow (perm)	1879	0	0	1917	1806	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	1285.0			61.8	390.4	
Travel Time (s)	77.1			3.7	28.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	584	63	15	424	53	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	647	0	0	439	63	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.8%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 4: Street D & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	537	58	14	390	49	9
Future Volume (Veh/h)	537	58	14	390	49	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	584	63	15	424	53	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			647		1070	616
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			647		1070	616
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		78	98
cM capacity (veh/h)			948		243	495
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	647	439	63			
Volume Left	0	15	53			
Volume Right	63	0	10			
cSH	1700	948	265			
Volume to Capacity	0.38	0.02	0.24			
Queue Length 95th (m)	0.0	0.4	6.9			
Control Delay (s)	0.0	0.5	22.8			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.5	22.8			
Approach LOS			C			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			41.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Street E & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	530	16	14	394	10	9
Future Volume (vph)	530	16	14	394	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996			0.936		
Flt Protected				0.998	0.974	
Satd. Flow (prot)	1895	0	0	1917	1751	0
Flt Permitted				0.998	0.974	
Satd. Flow (perm)	1895	0	0	1917	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	61.8			77.9	258.1	
Travel Time (s)	3.7			4.7	18.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	576	17	15	428	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	593	0	0	443	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
5: Street E & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	530	16	14	394	10	9
Future Volume (Veh/h)	530	16	14	394	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	576	17	15	428	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			593		1042	584
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			593		1042	584
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		96	98
cM capacity (veh/h)			993		253	515
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	593	443	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	993	333			
Volume to Capacity	0.35	0.02	0.06			
Queue Length 95th (m)	0.0	0.3	1.5			
Control Delay (s)	0.0	0.5	16.5			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.5	16.5			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			42.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Street A & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour













Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩	↩	↩
Traffic Volume (vph)	454	84	192	355	52	140
Future Volume (vph)	454	84	192	355	52	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979			0.850		
Flt Protected				0.983	0.950	
Satd. Flow (prot)	1865	0	0	1888	1825	1633
Flt Permitted				0.983	0.950	
Satd. Flow (perm)	1865	0	0	1888	1825	1633
Link Speed (k/h)	60			60	50	
Link Distance (m)	77.9			255.2	573.1	
Travel Time (s)	4.7			15.3	41.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	493	91	209	386	57	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	584	0	0	595	57	152
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	71.6%
	ICU Level of Service C
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Street A & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	454	84	192	355	52	140
Future Volume (Veh/h)	454	84	192	355	52	140
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	493	91	209	386	57	152
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			584			538
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			584			538
tC, single (s)			4.1			6.2
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			79			72
cM capacity (veh/h)			1001			547
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	584	595	57	152		
Volume Left	0	209	57	0		
Volume Right	91	0	0	152		
cSH	1700	1001	134	547		
Volume to Capacity	0.34	0.21	0.43	0.28		
Queue Length 95th (m)	0.0	6.0	14.1	8.6		
Control Delay (s)	0.0	5.0	50.4	14.1		
Lane LOS	A		F	B		
Approach Delay (s)	0.0	5.0	24.0			
Approach LOS	C					
Intersection Summary						
Average Delay	5.8					
Intersection Capacity Utilization	71.6%		ICU Level of Service			C
Analysis Period (min)	15					

Lanes, Volumes, Timings
7: Street L & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	579	16	14	537	10	9
Future Volume (vph)	579	16	14	537	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996			0.936		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1895	0	0	1919	1751	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1895	0	0	1919	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	255.2			188.5	159.1	
Travel Time (s)	15.3			11.3	11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	629	17	15	584	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	646	0	0	599	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
7: Street L & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	579	16	14	537	10	9
Future Volume (Veh/h)	579	16	14	537	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	629	17	15	584	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			646		1252	638
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			646		1252	638
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	98
cM capacity (veh/h)			949		189	481
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	646	599	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	949	266			
Volume to Capacity	0.38	0.02	0.08			
Queue Length 95th (m)	0.0	0.4	1.9			
Control Delay (s)	0.0	0.4	19.7			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	19.7			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			49.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	16	14	542	10	9
Future Volume (vph)	572	16	14	542	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996			0.936		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1895	0	0	1919	1751	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1895	0	0	1919	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	188.5			150.3	193.3	
Travel Time (s)	11.3			9.0	13.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	622	17	15	589	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	639	0	0	604	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.8%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	572	16	14	542	10	9
Future Volume (Veh/h)	572	16	14	542	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	622	17	15	589	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			639		1250	630
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			639		1250	630
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	98
cM capacity (veh/h)			955		190	485
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	639	604	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	955	267			
Volume to Capacity	0.38	0.02	0.08			
Queue Length 95th (m)	0.0	0.4	1.9			
Control Delay (s)	0.0	0.4	19.6			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	19.6			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			49.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Street N (East Leg) & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	8	7	551	5	4
Future Volume (vph)	572	8	7	551	5	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.940		
Flt Protected				0.999	0.973	
Satd. Flow (prot)	1899	0	0	1919	1757	0
Flt Permitted				0.999	0.973	
Satd. Flow (perm)	1899	0	0	1919	1757	0
Link Speed (k/h)	60			40	50	
Link Distance (m)	150.3			297.0	429.6	
Travel Time (s)	9.0			26.7	30.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	622	9	8	599	5	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	631	0	0	607	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 9: Street N (East Leg) & Burnhamthorpe Road E























Future Total 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	572	8	7	551	5	4
Future Volume (Veh/h)	572	8	7	551	5	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	622	9	8	599	5	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			631		1242	626
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			631		1242	626
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	99
cM capacity (veh/h)			961		193	487
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	631	607	9			
Volume Left	0	8	5			
Volume Right	9	0	4			
cSH	1700	961	264			
Volume to Capacity	0.37	0.01	0.03			
Queue Length 95th (m)	0.0	0.2	0.8			
Control Delay (s)	0.0	0.2	19.1			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	19.1			
Approach LOS			C			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			44.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Future Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.973			0.949			0.983			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1833	0	1807	1787	0	1789	4448	0	1772	4390	0
Flt Permitted	0.298			0.294			0.185			0.063		
Satd. Flow (perm)	550	1833	0	559	1787	0	348	4448	0	118	4390	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			21			22			21	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Adj. Flow (vph)	91	289	64	147	232	118	99	1604	202	141	1105	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	353	0	147	350	0	99	1806	0	141	1208	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		20.0	20.0		7.0	20.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.0	26.0		11.0	26.0	
Total Split (s)	38.0	38.0		38.0	38.0		66.0	66.0		16.0	82.0	
Total Split (%)	31.7%	31.7%		31.7%	31.7%		55.0%	55.0%		13.3%	68.3%	
Maximum Green (s)	32.0	32.0		32.0	32.0		60.0	60.0		12.0	76.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.6	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.4	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	32.0	32.0		32.0	32.0		59.9	59.9		75.7	73.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.51	0.51		0.64	0.63	
v/c Ratio	0.61	0.70		0.97	0.70		0.56	0.79		0.66	0.44	
Control Delay	57.6	46.5		109.6	45.1		35.6	27.0		35.2	11.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	57.6	46.5		109.6	45.1		35.6	27.0		35.2	11.7	
LOS	E	D		F	D		D	C		D	B	
Approach Delay		48.7			64.2			27.5			14.1	
Approach LOS		D			E			C			B	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 117.7
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 29.8
 Intersection LOS: C
 Intersection Capacity Utilization 86.2%
 ICU Level of Service E
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E

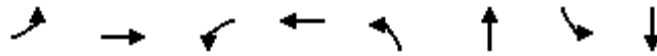


Queues

Future Total 2031

1: Trafalgar Road & Burnhamthorpe Road E

PM Peak Hour



























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	353	147	350	99	1806	141	1208
v/c Ratio	0.61	0.70	0.97	0.70	0.56	0.79	0.66	0.44
Control Delay	57.6	46.5	109.6	45.1	35.6	27.0	35.2	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	46.5	109.6	45.1	35.6	27.0	35.2	11.7
Queue Length 50th (m)	18.4	72.0	33.8	68.9	15.2	137.6	15.1	54.7
Queue Length 95th (m)	#42.0	107.2	#76.2	104.2	37.9	165.9	36.1	65.3
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	149	504	152	500	177	2278	244	2842
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.70	0.97	0.70	0.56	0.79	0.58	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Future Volume (vph)	86	275	61	140	220	112	94	1524	192	134	1050	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.97		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1832		1807	1788		1789	4449		1772	4391	
Flt Permitted	0.30	1.00		0.29	1.00		0.19	1.00		0.06	1.00	
Satd. Flow (perm)	551	1832		559	1788		349	4449		117	4391	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	91	289	64	147	232	118	99	1604	202	141	1105	103
RTOR Reduction (vph)	0	7	0	0	15	0	0	11	0	0	8	0
Lane Group Flow (vph)	91	346	0	147	335	0	99	1795	0	141	1200	0
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0		59.9	59.9		73.7	73.7	
Effective Green, g (s)	32.0	32.0		32.0	32.0		59.9	59.9		73.7	73.7	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.51	0.51		0.63	0.63	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	149	498		151	486		177	2264		211	2749	
v/s Ratio Prot		0.19			0.19			c0.40		c0.06	0.27	
v/s Ratio Perm	0.17			c0.26			0.28			0.36		
v/c Ratio	0.61	0.70		0.97	0.69		0.56	0.79		0.67	0.44	
Uniform Delay, d1	37.4	38.5		42.4	38.4		19.8	23.8		25.3	11.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.2	4.2		64.8	4.0		6.4	2.3		7.8	0.2	
Delay (s)	44.6	42.7		107.2	42.4		26.2	26.1		33.1	11.6	
Level of Service	D	D		F	D		C	C		C	B	
Approach Delay (s)		43.1			61.6			26.1			13.8	
Approach LOS		D			E			C			B	
Intersection Summary												
HCM 2000 Control Delay			28.1									C
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			117.7							16.0		
Intersection Capacity Utilization			86.2%									E
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	652	3	529	1400	0	577
Future Volume (vph)	652	3	529	1400	0	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.986		
Satd. Flow (prot)	1864	0	0	1881	1645	0
Flt Permitted				0.986		
Satd. Flow (perm)	1864	0	0	1881	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	672	3	545	1443	0	595
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	0	1988	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	183.2%
Analysis Period (min)	15
	ICU Level of Service H

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Traffic Volume (veh/h)	652	3	529	1400	0	577
Future Volume (Veh/h)	652	3	529	1400	0	577
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	672	3	545	1443	0	595
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			675		3206	674
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			675		3206	674
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			41		100	0
cM capacity (veh/h)			926		5	457
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	675	1988	595			
Volume Left	0	545	0			
Volume Right	3	0	595			
cSH	1700	926	457			
Volume to Capacity	0.40	0.59	1.30			
Queue Length 95th (m)	0.0	30.1	196.9			
Control Delay (s)	0.0	14.3	177.4			
Lane LOS			B	F		
Approach Delay (s)	0.0	14.3	177.4			
Approach LOS			F			
Intersection Summary						
Average Delay			41.1			
Intersection Capacity Utilization			183.2%	ICU Level of Service		H
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: Street D & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	537	58	14	390	49	9
Future Volume (vph)	537	58	14	390	49	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987			0.979		
Flt Protected				0.998	0.960	
Satd. Flow (prot)	1879	0	0	1917	1806	0
Flt Permitted				0.998	0.960	
Satd. Flow (perm)	1879	0	0	1917	1806	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	1285.0			61.8	390.4	
Travel Time (s)	77.1			3.7	28.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	584	63	15	424	53	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	647	0	0	439	63	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.8%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 4: Street D & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	537	58	14	390	49	9
Future Volume (Veh/h)	537	58	14	390	49	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	584	63	15	424	53	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			647		1070	616
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			647		1070	616
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		78	98
cM capacity (veh/h)			948		243	495
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	647	439	63			
Volume Left	0	15	53			
Volume Right	63	0	10			
cSH	1700	948	265			
Volume to Capacity	0.38	0.02	0.24			
Queue Length 95th (m)	0.0	0.4	6.9			
Control Delay (s)	0.0	0.5	22.8			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.5	22.8			
Approach LOS			C			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			41.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Street E & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	530	16	14	394	10	9
Future Volume (vph)	530	16	14	394	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996			0.936		
Flt Protected				0.998	0.974	
Satd. Flow (prot)	1895	0	0	1917	1751	0
Flt Permitted				0.998	0.974	
Satd. Flow (perm)	1895	0	0	1917	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	61.8			77.9	258.1	
Travel Time (s)	3.7			4.7	18.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	576	17	15	428	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	593	0	0	443	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
5: Street E & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	530	16	14	394	10	9
Future Volume (Veh/h)	530	16	14	394	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	576	17	15	428	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			593		1042	584
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			593		1042	584
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		96	98
cM capacity (veh/h)			993		253	515
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	593	443	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	993	333			
Volume to Capacity	0.35	0.02	0.06			
Queue Length 95th (m)	0.0	0.3	1.5			
Control Delay (s)	0.0	0.5	16.5			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.5	16.5			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			42.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Street A & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour













Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩			↩	↩	↩
Traffic Volume (vph)	454	84	192	355	52	140
Future Volume (vph)	454	84	192	355	52	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.979			0.850		
Flt Protected				0.983	0.950	
Satd. Flow (prot)	1865	0	0	1888	1825	1633
Flt Permitted				0.983	0.950	
Satd. Flow (perm)	1865	0	0	1888	1825	1633
Link Speed (k/h)	60			60	50	
Link Distance (m)	77.9			255.2	573.1	
Travel Time (s)	4.7			15.3	41.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	493	91	209	386	57	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	584	0	0	595	57	152
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 71.6% ICU Level of Service C
 Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
6: Street A & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	454	84	192	355	52	140
Future Volume (Veh/h)	454	84	192	355	52	140
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	493	91	209	386	57	152
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			584	1342		538
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			584	1342		538
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			79	57	72	
cM capacity (veh/h)			1001	134	547	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	584	595	57	152		
Volume Left	0	209	57	0		
Volume Right	91	0	0	152		
cSH	1700	1001	134	547		
Volume to Capacity	0.34	0.21	0.43	0.28		
Queue Length 95th (m)	0.0	6.0	14.1	8.6		
Control Delay (s)	0.0	5.0	50.4	14.1		
Lane LOS	A		F	B		
Approach Delay (s)	0.0	5.0	24.0			
Approach LOS	C					
Intersection Summary						
Average Delay	5.8					
Intersection Capacity Utilization	71.6%		ICU Level of Service			C
Analysis Period (min)	15					

Lanes, Volumes, Timings
7: Street L & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	579	16	14	537	10	9
Future Volume (vph)	579	16	14	537	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996			0.936		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1895	0	0	1919	1751	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1895	0	0	1919	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	255.2			188.5	159.1	
Travel Time (s)	15.3			11.3	11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	629	17	15	584	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	646	0	0	599	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 49.5% ICU Level of Service A
 Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
7: Street L & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	579	16	14	537	10	9
Future Volume (Veh/h)	579	16	14	537	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	629	17	15	584	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			646		1252	638
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			646		1252	638
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	98
cM capacity (veh/h)			949		189	481
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	646	599	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	949	266			
Volume to Capacity	0.38	0.02	0.08			
Queue Length 95th (m)	0.0	0.4	1.9			
Control Delay (s)	0.0	0.4	19.7			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	19.7			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			49.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



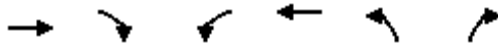
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	16	14	542	10	9
Future Volume (vph)	572	16	14	542	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996			0.936		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1895	0	0	1919	1751	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1895	0	0	1919	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	188.5			150.3	193.3	
Travel Time (s)	11.3			9.0	13.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	622	17	15	589	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	639	0	0	604	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.8%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2031
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	572	16	14	542	10	9
Future Volume (Veh/h)	572	16	14	542	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	622	17	15	589	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			639		1250	630
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			639		1250	630
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		94	98
cM capacity (veh/h)			955		190	485
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	639	604	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	955	267			
Volume to Capacity	0.38	0.02	0.08			
Queue Length 95th (m)	0.0	0.4	1.9			
Control Delay (s)	0.0	0.4	19.6			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	19.6			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			49.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Street N (East Leg) & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	8	7	551	5	4
Future Volume (vph)	572	8	7	551	5	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.940		
Flt Protected				0.999	0.973	
Satd. Flow (prot)	1899	0	0	1919	1757	0
Flt Permitted				0.999	0.973	
Satd. Flow (perm)	1899	0	0	1919	1757	0
Link Speed (k/h)	60			40	50	
Link Distance (m)	150.3			297.0	429.6	
Travel Time (s)	9.0			26.7	30.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	622	9	8	599	5	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	631	0	0	607	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.6%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 9: Street N (East Leg) & Burnhamthorpe Road E

Future Total 2031
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	572	8	7	551	5	4
Future Volume (Veh/h)	572	8	7	551	5	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	622	9	8	599	5	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			631		1242	626
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			631		1242	626
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	99
cM capacity (veh/h)			961		193	487
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	631	607	9			
Volume Left	0	8	5			
Volume Right	9	0	4			
cSH	1700	961	264			
Volume to Capacity	0.37	0.01	0.03			
Queue Length 95th (m)	0.0	0.2	0.8			
Control Delay (s)	0.0	0.2	19.1			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	19.1			
Approach LOS			C			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			44.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2031 - Widening Only
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1030	2	171	579	1	346
Future Volume (vph)	1030	2	171	579	1	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.989		
Satd. Flow (prot)	3614	0	0	3464	1629	0
Fl _t Permitted				0.989		
Satd. Flow (perm)	3614	0	0	3464	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1132	2	188	636	1	380
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1134	0	0	824	381	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	81.0%
ICU Level of Service	D
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis Future Background 2031 - Widening Only
 2: Burnhamthorpe Road E & William Halton Parkway AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	1030	2	171	579	1	346
Future Volume (Veh/h)	1030	2	171	579	1	346
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1132	2	188	636	1	380
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1134		1827	567
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1134		1827	567
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			68		98	19
cM capacity (veh/h)			595		48	467
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	755	379	400	424	381	
Volume Left	0	0	188	0	1	
Volume Right	0	2	0	0	380	
cSH	1700	1700	595	1700	456	
Volume to Capacity	0.44	0.22	0.32	0.25	0.84	
Queue Length 95th (m)	0.0	0.0	10.3	0.0	61.9	
Control Delay (s)	0.0	0.0	9.1	0.0	41.7	
Lane LOS	A			E		
Approach Delay (s)	0.0		4.4		41.7	
Approach LOS				E		
Intersection Summary						
Average Delay			8.4			
Intersection Capacity Utilization			81.0%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2031 - Widening Only
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (vph)	652	3	274	1400	0	398
Future Volume (vph)	652	3	274	1400	0	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.992		
Satd. Flow (prot)	3541	0	0	3591	1645	0
Flt Permitted				0.992		
Satd. Flow (perm)	3541	0	0	3591	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	672	3	282	1443	0	410
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	0	1725	410	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	99.4%
ICU Level of Service	F
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis Future Background 2031 - Widening Only
 2: Burnhamthorpe Road E & William Halton Parkway PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	652	3	274	1400	0	398
Future Volume (Veh/h)	652	3	274	1400	0	398
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	672	3	282	1443	0	410
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			675		1959	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			675		1959	338
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			70		100	38
cM capacity (veh/h)			926		40	661
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	448	227	763	962	410	
Volume Left	0	0	282	0	0	
Volume Right	0	3	0	0	410	
cSH	1700	1700	926	1700	661	
Volume to Capacity	0.26	0.13	0.30	0.57	0.62	
Queue Length 95th (m)	0.0	0.0	9.8	0.0	32.7	
Control Delay (s)	0.0	0.0	6.7	0.0	18.9	
Lane LOS	A			C		
Approach Delay (s)	0.0		3.0		18.9	
Approach LOS	C					
Intersection Summary						
Average Delay			4.6			
Intersection Capacity Utilization			99.4%	ICU Level of Service	F	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031 - Widening Only
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	1030	2	260	579	1	598
Future Volume (vph)	1030	2	260	579	1	598
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.985		
Satd. Flow (prot)	3614	0	0	3447	1629	0
Fl _t Permitted				0.985		
Satd. Flow (perm)	3614	0	0	3447	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1132	2	286	636	1	657
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1134	0	0	922	658	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	99.2%
ICU Level of Service	F
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031 - Widening Only
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	1030	2	260	579	1	598
Future Volume (Veh/h)	1030	2	260	579	1	598
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1132	2	286	636	1	657
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1134		2023	567
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1134		2023	567
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			52		96	0
cM capacity (veh/h)			595		27	467
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	755	379	498	424	658	
Volume Left	0	0	286	0	1	
Volume Right	0	2	0	0	657	
cSH	1700	1700	595	1700	455	
Volume to Capacity	0.44	0.22	0.48	0.25	1.45	
Queue Length 95th (m)	0.0	0.0	19.8	0.0	249.6	
Control Delay (s)	0.0	0.0	13.4	0.0	236.2	
Lane LOS	B			F		
Approach Delay (s)	0.0		7.2		236.2	
Approach LOS				F		
Intersection Summary						
Average Delay			59.7			
Intersection Capacity Utilization			99.2%	ICU Level of Service	F	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031 - Widening Only
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↔	
Traffic Volume (vph)	652	3	529	1400	0	577
Future Volume (vph)	652	3	529	1400	0	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.986		
Satd. Flow (prot)	3541	0	0	3573	1645	0
Flt Permitted				0.986		
Satd. Flow (perm)	3541	0	0	3573	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	672	3	545	1443	0	595
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	0	1988	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

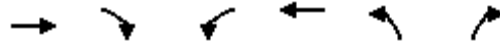
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	117.9%
ICU Level of Service	H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway

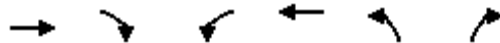
Future Total 2031 - Widening Only
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	652	3	529	1400	0	577
Future Volume (Veh/h)	652	3	529	1400	0	577
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	672	3	545	1443	0	595
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			675		2485	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			675		2485	338
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			41		100	10
cM capacity (veh/h)			926		10	661
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	448	227	1026	962	595	
Volume Left	0	0	545	0	0	
Volume Right	0	3	0	0	595	
cSH	1700	1700	926	1700	661	
Volume to Capacity	0.26	0.13	0.59	0.57	0.90	
Queue Length 95th (m)	0.0	0.0	30.1	0.0	86.3	
Control Delay (s)	0.0	0.0	13.1	0.0	40.0	
Lane LOS	B			E		
Approach Delay (s)	0.0		6.8		40.0	
Approach LOS				E		
Intersection Summary						
Average Delay			11.4			
Intersection Capacity Utilization			117.9%	ICU Level of Service	H	
Analysis Period (min)			15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1030	2	171	579	1	346
Future Volume (vph)	1030	2	171	579	1	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3614	0	1738	3510	1629	0
Flt Permitted			0.135			
Satd. Flow (perm)	3614	0	247	3510	1629	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					365	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1132	2	188	636	1	380
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1134	0	188	636	381	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	

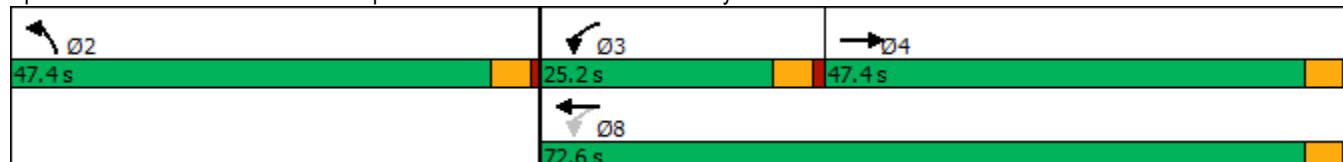


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	47.4		25.2	72.6	47.4	
Total Split (%)	39.5%		21.0%	60.5%	39.5%	
Maximum Green (s)	42.9		20.7	68.1	42.9	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	28.4		42.5	42.5	8.3	
Actuated g/C Ratio	0.47		0.70	0.70	0.14	
v/c Ratio	0.67		0.47	0.26	0.71	
Control Delay	14.9		8.9	3.6	12.5	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	14.9		8.9	3.6	12.5	
LOS	B		A	A	B	
Approach Delay	14.9			4.8	12.5	
Approach LOS	B			A	B	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	60.3
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	10.9
Intersection LOS:	B
Intersection Capacity Utilization:	70.7%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway

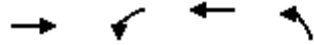


Queues

Future Background 2031 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

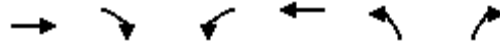
AM Peak Hour



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1134	188	636	381
v/c Ratio	0.67	0.47	0.26	0.71
Control Delay	14.9	8.9	3.6	12.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.9	8.9	3.6	12.5
Queue Length 50th (m)	40.7	4.2	8.0	1.5
Queue Length 95th (m)	90.9	21.1	22.4	26.5
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	2733	718	3356	1321
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.41	0.26	0.19	0.29
Intersection Summary				

HCM Signalized Intersection Capacity Analysis Background 2031 - Widening and Signalization 2: Burnhamthorpe Road E & William Halton Parkway

AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1030	2	171	579	1	346
Future Volume (vph)	1030	2	171	579	1	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3613		1738	3510	1630	
Flt Permitted	1.00		0.13	1.00	1.00	
Satd. Flow (perm)	3613		246	3510	1630	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1132	2	188	636	1	380
RTOR Reduction (vph)	0	0	0	0	314	0
Lane Group Flow (vph)	1134	0	188	636	67	0
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	28.7		42.4	42.4	8.3	
Effective Green, g (s)	28.7		42.4	42.4	8.3	
Actuated g/C Ratio	0.48		0.71	0.71	0.14	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1736		404	2492	226	
v/s Ratio Prot	c0.31		c0.07	0.18	c0.04	
v/s Ratio Perm			0.26			
v/c Ratio	0.65		0.47	0.26	0.30	
Uniform Delay, d1	11.7		6.2	3.1	23.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.9		0.9	0.1	0.7	
Delay (s)	12.6		7.0	3.1	23.8	
Level of Service	B		A	A	C	
Approach Delay (s)	12.6			4.0	23.8	
Approach LOS	B			A	C	

Intersection Summary

HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

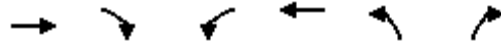


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (vph)	652	3	274	1400	0	398
Future Volume (vph)	652	3	274	1400	0	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3541	0	1825	3614	1645	0
Flt Permitted			0.248			
Satd. Flow (perm)	3541	0	476	3614	1645	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					642	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	672	3	282	1443	0	410
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	282	1443	410	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2031 - Widening and Signalization

PM Peak Hour

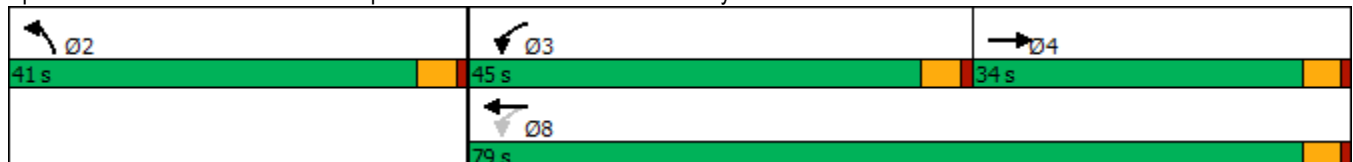


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	34.0		45.0	79.0	41.0	
Total Split (%)	28.3%		37.5%	65.8%	34.2%	
Maximum Green (s)	29.5		40.5	74.5	36.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	14.2		28.2	28.2	5.6	
Actuated g/C Ratio	0.33		0.66	0.66	0.13	
v/c Ratio	0.58		0.46	0.61	0.53	
Control Delay	14.3		5.4	5.3	2.6	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	14.3		5.4	5.3	2.6	
LOS	B		A	A	A	
Approach Delay	14.3			5.3	2.6	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 43
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.61
 Intersection Signal Delay: 7.1
 Intersection Capacity Utilization 70.8%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service C

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway



Queues

Future Background 2031 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

PM Peak Hour



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	675	282	1443	410
v/c Ratio	0.58	0.46	0.61	0.53
Control Delay	14.3	5.4	5.3	2.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	14.3	5.4	5.3	2.6
Queue Length 50th (m)	20.0	6.0	22.8	0.0
Queue Length 95th (m)	37.8	11.0	32.7	0.0
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	2475	1690	3614	1506
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.17	0.40	0.27

Intersection Summary

HCM Signalized Intersection Capacity Analysis Background 2031 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (vph)	652	3	274	1400	0	398
Future Volume (vph)	652	3	274	1400	0	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.86	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3542		1825	3614	1645	
Flt Permitted	1.00		0.25	1.00	1.00	
Satd. Flow (perm)	3542		476	3614	1645	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	672	3	282	1443	0	410
RTOR Reduction (vph)	0	0	0	0	356	0
Lane Group Flow (vph)	675	0	282	1443	54	0
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	14.3		28.2	28.2	5.6	
Effective Green, g (s)	14.3		28.2	28.2	5.6	
Actuated g/C Ratio	0.33		0.66	0.66	0.13	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1183		609	2381	215	
v/s Ratio Prot	0.19		0.10	c0.40	c0.03	
v/s Ratio Perm			0.20			
v/c Ratio	0.57		0.46	0.61	0.25	
Uniform Delay, d1	11.7		3.9	4.1	16.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.7		0.6	0.4	0.6	
Delay (s)	12.4		4.4	4.6	17.3	
Level of Service	B		A	A	B	
Approach Delay (s)	12.4			4.6	17.3	
Approach LOS	B			A	B	

Intersection Summary

HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	42.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (vph)	1030	2	260	579	1	598
Future Volume (vph)	1030	2	260	579	1	598
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3614	0	1738	3510	1629	0
Flt Permitted			0.096			
Satd. Flow (perm)	3614	0	176	3510	1629	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					365	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1132	2	286	636	1	657
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1134	0	286	636	658	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031 - Widening and Signalization
 AM Peak Hour

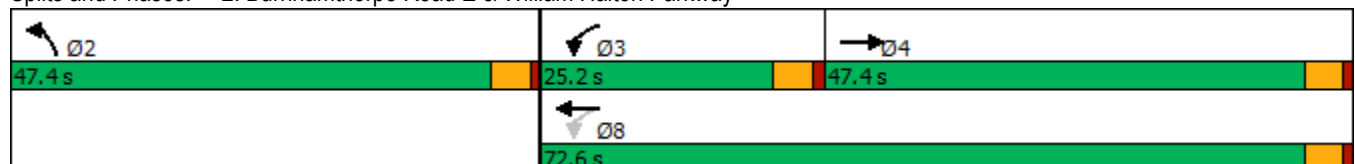


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	47.4		25.2	72.6	47.4	
Total Split (%)	39.5%		21.0%	60.5%	39.5%	
Maximum Green (s)	42.9		20.7	68.1	42.9	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	36.7		58.0	58.0	28.0	
Actuated g/C Ratio	0.38		0.61	0.61	0.29	
v/c Ratio	0.82		0.76	0.30	0.90	
Control Delay	34.4		38.3	10.7	30.7	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	34.4		38.3	10.7	30.7	
LOS	C		D	B	C	
Approach Delay	34.4			19.3	30.7	
Approach LOS	C			B	C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 95.7
 Natural Cycle: 75
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 28.4
 Intersection LOS: C
 Intersection Capacity Utilization 91.3%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway

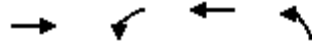


Queues

Future Total 2031 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

AM Peak Hour



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1134	286	636	658
v/c Ratio	0.82	0.76	0.30	0.90
Control Delay	34.4	38.3	10.7	30.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.4	38.3	10.7	30.7
Queue Length 50th (m)	102.8	36.6	28.4	62.4
Queue Length 95th (m)	#159.3	#85.2	50.8	119.2
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	1748	471	2559	976
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.61	0.25	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis Future Total 2031 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

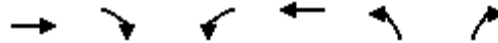
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1030	2	260	579	1	598
Future Volume (vph)	1030	2	260	579	1	598
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3613		1738	3510	1629	
Flt Permitted	1.00		0.10	1.00	1.00	
Satd. Flow (perm)	3613		176	3510	1629	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1132	2	286	636	1	657
RTOR Reduction (vph)	0	0	0	0	257	0
Lane Group Flow (vph)	1134	0	286	636	401	0
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	37.1		58.0	58.0	28.0	
Effective Green, g (s)	37.1		58.0	58.0	28.0	
Actuated g/C Ratio	0.39		0.61	0.61	0.29	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1410		377	2142	480	
v/s Ratio Prot	0.31		c0.13	0.18	c0.25	
v/s Ratio Perm			c0.33			
v/c Ratio	0.80		0.76	0.30	0.83	
Uniform Delay, d1	25.7		23.7	8.8	31.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	3.4		8.5	0.1	11.9	
Delay (s)	29.2		32.2	8.9	43.2	
Level of Service	C		C	A	D	
Approach Delay (s)	29.2			16.1	43.2	
Approach LOS	C			B	D	

Intersection Summary

HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (vph)	652	3	529	1400	0	577
Future Volume (vph)	652	3	529	1400	0	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3541	0	1825	3614	1645	0
Flt Permitted			0.222			
Satd. Flow (perm)	3541	0	426	3614	1645	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					642	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	672	3	545	1443	0	595
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	545	1443	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2031 - Widening and Signalization
 PM Peak Hour

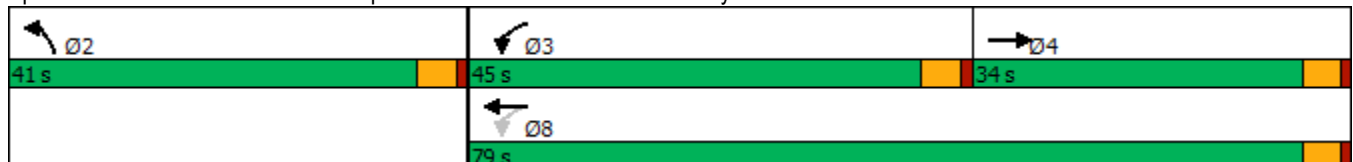


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	34.0		45.0	79.0	41.0	
Total Split (%)	28.3%		37.5%	65.8%	34.2%	
Maximum Green (s)	29.5		40.5	74.5	36.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	19.3		45.7	45.7	8.0	
Actuated g/C Ratio	0.30		0.72	0.72	0.13	
v/c Ratio	0.63		0.70	0.55	0.77	
Control Delay	23.5		13.5	5.2	9.8	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	23.5		13.5	5.2	9.8	
LOS	C		B	A	A	
Approach Delay	23.5			7.4	9.8	
Approach LOS	C			A	A	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 63.5
 Natural Cycle: 70
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 11.2
 Intersection LOS: B
 Intersection Capacity Utilization 94.4%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway



Queues

2: Burnhamthorpe Road E & William Halton Parkway



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	675	545	1443	595
v/c Ratio	0.63	0.70	0.55	0.77
Control Delay	23.5	13.5	5.2	9.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	23.5	13.5	5.2	9.8
Queue Length 50th (m)	30.4	22.0	22.8	0.0
Queue Length 95th (m)	77.8	83.1	71.9	18.8
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	1790	1310	3434	1269
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.42	0.42	0.47

Intersection Summary

HCM Signalized Intersection Capacity Analysis Future Total 2031 - Widening and Signalization
 2: Burnhamthorpe Road E & William Halton Parkway

PM Peak Hour

























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	652	3	529	1400	0	577
Future Volume (vph)	652	3	529	1400	0	577
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.86	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3542		1825	3614	1645	
Flt Permitted	1.00		0.22	1.00	1.00	
Satd. Flow (perm)	3542		427	3614	1645	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	672	3	545	1443	0	595
RTOR Reduction (vph)	0	0	0	0	519	0
Lane Group Flow (vph)	675	0	545	1443	76	0
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	19.7		45.7	45.7	8.0	
Effective Green, g (s)	19.7		45.7	45.7	8.0	
Actuated g/C Ratio	0.31		0.73	0.73	0.13	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1112		790	2634	209	
v/s Ratio Prot	0.19		c0.24	0.40	c0.05	
v/s Ratio Perm			c0.27			
v/c Ratio	0.61		0.69	0.55	0.36	
Uniform Delay, d1	18.2		8.0	3.8	25.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.9		2.5	0.2	1.1	
Delay (s)	19.2		10.5	4.1	26.1	
Level of Service	B		B	A	C	
Approach Delay (s)	19.2			5.8	26.1	
Approach LOS	B			A	C	

Intersection Summary

HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	62.7	Sum of lost time (s)	13.5
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2036
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	179	128	105	86	84	76	1198	148	120	1366	58
Future Volume (vph)	123	179	128	105	86	84	76	1198	148	120	1366	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.937			0.926			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1770	0	1807	1694	0	1772	4363	0	1825	4368	0
Flt Permitted	0.563			0.240			0.081			0.076		
Satd. Flow (perm)	1082	1770	0	457	1694	0	151	4363	0	146	4368	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			39			19			6	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%
Adj. Flow (vph)	129	188	135	111	91	88	80	1261	156	126	1438	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	323	0	111	179	0	80	1417	0	126	1499	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

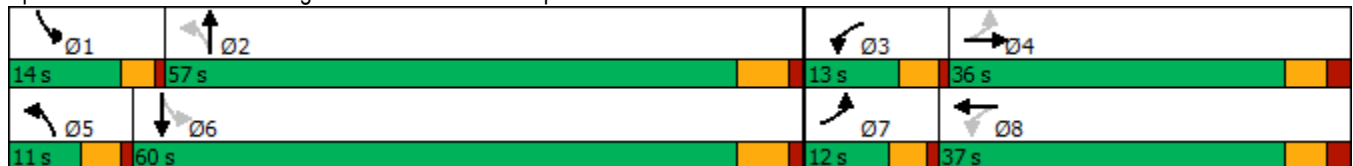
Future Background 2036
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0		7.0	20.0	
Minimum Split (s)	9.5	16.0		9.5	16.0		9.5	26.0		11.0	26.0	
Total Split (s)	12.0	36.0		13.0	37.0		11.0	57.0		14.0	60.0	
Total Split (%)	10.0%	30.0%		10.8%	30.8%		9.2%	47.5%		11.7%	50.0%	
Maximum Green (s)	7.5	30.0		8.5	31.0		6.5	51.0		10.0	54.0	
Yellow Time (s)	3.5	3.7		3.5	3.7		3.5	4.6		3.0	4.6	
All-Red Time (s)	1.0	2.3		1.0	2.3		1.0	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.5	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	32.1	23.0		33.3	23.6		56.1	48.1		61.6	52.6	
Actuated g/C Ratio	0.29	0.21		0.31	0.22		0.52	0.44		0.57	0.48	
v/c Ratio	0.35	0.82		0.46	0.45		0.46	0.73		0.58	0.71	
Control Delay	29.4	54.8		32.4	32.8		22.4	28.1		27.6	25.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.4	54.8		32.4	32.8		22.4	28.1		27.6	25.8	
LOS	C	D		C	C		C	C		C	C	
Approach Delay		47.5			32.7			27.8			26.0	
Approach LOS		D			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 108.9
 Natural Cycle: 75
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 29.7
 Intersection LOS: C
 Intersection Capacity Utilization 73.2%
 ICU Level of Service D
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E

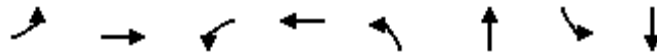


Queues

Future Background 2036

1: Trafalgar Road & Burnhamthorpe Road E

AM Peak Hour





























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	129	323	111	179	80	1417	126	1499
v/c Ratio	0.35	0.82	0.46	0.45	0.46	0.73	0.58	0.71
Control Delay	29.4	54.8	32.4	32.8	22.4	28.1	27.6	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	54.8	32.4	32.8	22.4	28.1	27.6	25.8
Queue Length 50th (m)	20.4	63.3	17.4	26.9	7.4	102.3	11.8	108.4
Queue Length 95th (m)	34.5	95.6	30.2	47.6	17.4	135.5	31.0	141.1
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	371	516	248	518	176	2095	240	2205
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.63	0.45	0.35	0.45	0.68	0.53	0.68

Intersection Summary

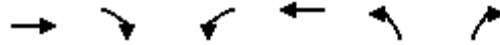
HCM Signalized Intersection Capacity Analysis
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2036
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								  			  		
Traffic Volume (vph)	123	179	128	105	86	84	76	1198	148	120	1366	58	
Future Volume (vph)	123	179	128	105	86	84	76	1198	148	120	1366	58	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.5	6.0		4.5	6.0		4.5	6.0		4.0	6.0		
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80		
Frt	1.00	0.94		1.00	0.93		1.00	0.98		1.00	0.99		
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1825	1771		1807	1694		1772	4365		1825	4368		
Flt Permitted	0.56	1.00		0.24	1.00		0.08	1.00		0.08	1.00		
Satd. Flow (perm)	1081	1771		456	1694		151	4365		146	4368		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	129	188	135	111	91	88	80	1261	156	126	1438	61	
RTOR Reduction (vph)	0	23	0	0	31	0	0	10	0	0	3	0	
Lane Group Flow (vph)	129	300	0	111	148	0	80	1407	0	126	1496	0	
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA		
Protected Phases	7	4		3	8		5	2		1	6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)	30.6	23.0		31.8	23.6		54.2	49.3		61.5	52.7		
Effective Green, g (s)	30.6	23.0		31.8	23.6		54.2	49.3		61.5	52.7		
Actuated g/C Ratio	0.28	0.21		0.29	0.21		0.49	0.45		0.56	0.48		
Clearance Time (s)	4.5	6.0		4.5	6.0		4.5	6.0		4.0	6.0		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0		
Lane Grp Cap (vph)	352	370		232	364		146	1959		216	2096		
v/s Ratio Prot	0.03	c0.17		c0.04	0.09		0.02	0.32		c0.05	c0.34		
v/s Ratio Perm	0.08			0.10			0.24			0.28			
v/c Ratio	0.37	0.81		0.48	0.41		0.55	0.72		0.58	0.71		
Uniform Delay, d1	30.8	41.3		30.5	37.1		17.6	24.6		17.1	22.6		
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.6	12.6		1.6	0.7		4.2	1.6		4.0	1.5		
Delay (s)	31.4	54.0		32.0	37.8		21.8	26.2		21.1	24.0		
Level of Service	C	D		C	D		C	C		C	C		
Approach Delay (s)		47.5			35.6			26.0			23.8		
Approach LOS		D			D			C			C		
Intersection Summary													
HCM 2000 Control Delay			28.3				HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.73										
Actuated Cycle Length (s)			109.8				Sum of lost time (s)			21.0			
Intersection Capacity Utilization			73.2%				ICU Level of Service			D			
Analysis Period (min)			15										
c Critical Lane Group													

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2036
 AM Peak Hour



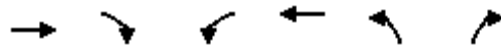
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1121	2	186	635	1	405
Future Volume (vph)	1121	2	186	635	1	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.989		
Satd. Flow (prot)	1902	0	0	1823	1629	0
Fl _t Permitted				0.989		
Satd. Flow (perm)	1902	0	0	1823	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1232	2	204	698	1	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1234	0	0	902	446	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	138.0%
Analysis Period (min)	15
	ICU Level of Service H

HCM Unsignalized Intersection Capacity Analysis
2: Burnhamthorpe Road E & William Halton Parkway























Future Background 2036
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1121	2	186	635	1	405
Future Volume (Veh/h)	1121	2	186	635	1	405
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1232	2	204	698	1	445
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1234		2339	1233
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1234		2339	1233
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			63		96	0
cM capacity (veh/h)			554		26	216
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1234	902	446			
Volume Left	0	204	1			
Volume Right	2	0	445			
cSH	1700	554	212			
Volume to Capacity	0.73	0.37	2.10			
Queue Length 95th (m)	0.0	12.8	259.4			
Control Delay (s)	0.0	10.8	548.2			
Lane LOS		B	F			
Approach Delay (s)	0.0	10.8	548.2			
Approach LOS			F			
Intersection Summary						
Average Delay			98.5			
Intersection Capacity Utilization			138.0%	ICU Level of Service	H	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2036
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	184	72	149	164	82	103	1665	185	85	1142	107
Future Volume (vph)	99	184	72	149	164	82	103	1665	185	85	1142	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.958			0.950			0.985			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1804	0	1807	1789	0	1789	4457	0	1772	4390	0
Flt Permitted	0.407			0.395			0.112			0.071		
Satd. Flow (perm)	752	1804	0	751	1789	0	211	4457	0	132	4390	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			22			19			14	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Adj. Flow (vph)	104	194	76	157	173	86	108	1753	195	89	1202	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	270	0	157	259	0	108	1948	0	89	1315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

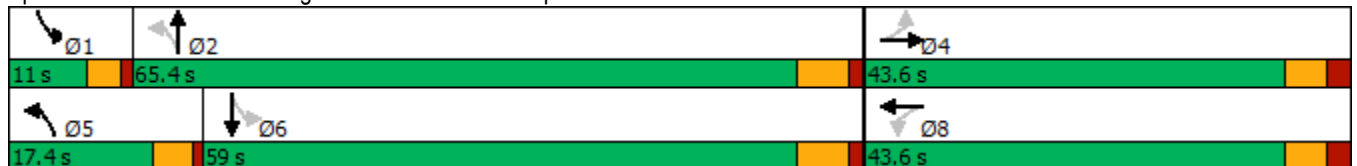
Future Background 2036
PM Peak Hour

	↖		→		↘		↙		←		↖		↗		↑		↘		↓		↙	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR										
Permitted Phases	4				8				2				6									
Detector Phase	4	4			8	8			5	2			1	6								
Switch Phase																						
Minimum Initial (s)	10.0	10.0			10.0	10.0			5.0	20.0			7.0	20.0								
Minimum Split (s)	16.0	16.0			16.0	16.0			9.5	26.0			11.0	26.0								
Total Split (s)	43.6	43.6			43.6	43.6			17.4	65.4			11.0	59.0								
Total Split (%)	36.3%	36.3%			36.3%	36.3%			14.5%	54.5%			9.2%	49.2%								
Maximum Green (s)	37.6	37.6			37.6	37.6			12.9	59.4			7.0	53.0								
Yellow Time (s)	3.7	3.7			3.7	3.7			3.5	4.6			3.0	4.6								
All-Red Time (s)	2.3	2.3			2.3	2.3			1.0	1.4			1.0	1.4								
Lost Time Adjust (s)	0.0	0.0			-1.0	0.0			0.0	-1.0			0.0	0.0								
Total Lost Time (s)	6.0	6.0			5.0	6.0			4.5	5.0			4.0	6.0								
Lead/Lag																						
									Lead	Lag									Lead	Lag		
Lead-Lag Optimize?									Yes	Yes									Yes	Yes		
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	5.0			3.0	5.0								
Recall Mode	None	None			None	None			None	None			None	None								
Act Effct Green (s)	23.8	23.8			24.8	23.8			67.7	60.7			64.4	55.3								
Actuated g/C Ratio	0.23	0.23			0.24	0.23			0.65	0.58			0.62	0.53								
v/c Ratio	0.60	0.64			0.88	0.61			0.41	0.75			0.46	0.56								
Control Delay	51.6	40.8			80.9	39.0			12.6	20.5			21.1	18.8								
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0			0.0	0.0								
Total Delay	51.6	40.8			80.9	39.0			12.6	20.5			21.1	18.8								
LOS	D	D			F	D			B	C			C	B								
Approach Delay	43.8				54.8				20.1				18.9									
Approach LOS	D				D				C				B									

Intersection Summary

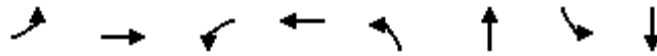
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 104.1
 Natural Cycle: 70
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 25.2
 Intersection Capacity Utilization 81.6%
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E



1: Trafalgar Road & Burnhamthorpe Road E

PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	270	157	259	108	1948	89	1315
v/c Ratio	0.60	0.64	0.88	0.61	0.41	0.75	0.46	0.56
Control Delay	51.6	40.8	80.9	39.0	12.6	20.5	21.1	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	40.8	80.9	39.0	12.6	20.5	21.1	18.8
Queue Length 50th (m)	19.5	47.8	31.6	44.4	6.9	120.1	5.5	68.7
Queue Length 95th (m)	37.1	72.9	#57.7	68.9	18.0	187.3	21.8	116.4
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	276	673	283	671	340	2638	193	2415
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.40	0.55	0.39	0.32	0.74	0.46	0.54

























Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Trafalgar Road & Burnhamthorpe Road E

Future Background 2036
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	99	184	72	149	164	82	103	1665	185	85	1142	107
Future Volume (vph)	99	184	72	149	164	82	103	1665	185	85	1142	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		5.0	6.0		4.5	5.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.96		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1804		1807	1790		1789	4457		1772	4391	
Flt Permitted	0.41	1.00		0.39	1.00		0.11	1.00		0.07	1.00	
Satd. Flow (perm)	753	1804		751	1790		211	4457		133	4391	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	194	76	157	173	86	108	1753	195	89	1202	113
RTOR Reduction (vph)	0	13	0	0	17	0	0	8	0	0	6	0
Lane Group Flow (vph)	104	257	0	157	242	0	108	1940	0	89	1309	0
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.8	23.8		23.8	23.8		67.9	59.7		61.6	56.3	
Effective Green, g (s)	23.8	23.8		24.8	23.8		67.9	60.7		61.6	56.3	
Actuated g/C Ratio	0.23	0.23		0.24	0.23		0.65	0.58		0.59	0.54	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.5	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	171	409		177	406		260	2581		161	2358	
v/s Ratio Prot		0.14			0.14		0.03	c0.44		c0.03	0.30	
v/s Ratio Perm	0.14			c0.21			0.24			0.30		
v/c Ratio	0.61	0.63		0.89	0.60		0.42	0.75		0.55	0.55	
Uniform Delay, d1	36.3	36.5		38.6	36.2		9.5	16.4		15.0	16.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.0	3.0		37.2	2.4		1.1	1.5		4.1	0.5	
Delay (s)	42.3	39.5		75.9	38.6		10.5	18.0		19.0	16.5	
Level of Service	D	D		E	D		B	B		B	B	
Approach Delay (s)		40.3			52.6			17.6			16.6	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM 2000 Control Delay			22.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			104.8				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			81.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2036
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	708	3	299	1533	0	464
Future Volume (vph)	708	3	299	1533	0	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.992		
Satd. Flow (prot)	1864	0	0	1890	1645	0
Flt Permitted				0.992		
Satd. Flow (perm)	1864	0	0	1890	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	730	3	308	1580	0	478
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	0	0	1888	478	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	173.4%
ICU Level of Service	H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
2: Burnhamthorpe Road E & William Halton Parkway























Future Background 2036
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Traffic Volume (veh/h)	708	3	299	1533	0	464
Future Volume (Veh/h)	708	3	299	1533	0	464
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	730	3	308	1580	0	478
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			733		2928	732
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			733		2928	732
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			65		100	0
cM capacity (veh/h)			881		11	423
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	733	1888	478			
Volume Left	0	308	0			
Volume Right	3	0	478			
cSH	1700	881	423			
Volume to Capacity	0.43	0.35	1.13			
Queue Length 95th (m)	0.0	12.0	131.1			
Control Delay (s)	0.0	11.3	114.7			
Lane LOS		B	F			
Approach Delay (s)	0.0	11.3	114.7			
Approach LOS			F			
Intersection Summary						
Average Delay			24.5			
Intersection Capacity Utilization			173.4%		ICU Level of Service	H
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	123	219	128	128	203	137	76	1198	156	139	1366	58
Future Volume (vph)	123	219	128	128	203	137	76	1198	156	139	1366	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.945			0.940			0.983			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1789	0	1807	1713	0	1772	4363	0	1825	4368	0
Flt Permitted	0.233			0.191			0.080			0.075		
Satd. Flow (perm)	448	1789	0	363	1713	0	149	4363	0	144	4368	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			27			20			6	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%
Adj. Flow (vph)	129	231	135	135	214	144	80	1261	164	146	1438	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	129	366	0	135	358	0	80	1425	0	146	1499	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

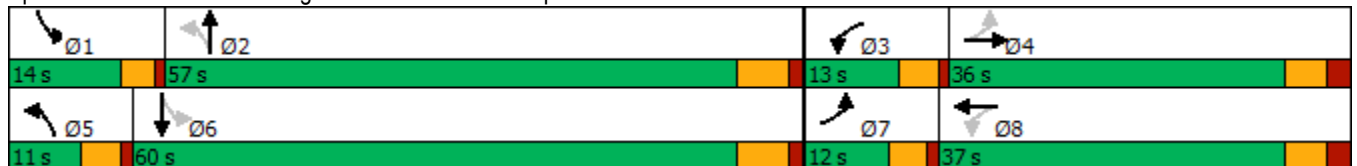
Future Total 2036
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	20.0		7.0	20.0	
Minimum Split (s)	9.5	16.0		9.5	16.0		9.5	26.0		11.0	26.0	
Total Split (s)	12.0	36.0		13.0	37.0		11.0	57.0		14.0	60.0	
Total Split (%)	10.0%	30.0%		10.8%	30.8%		9.2%	47.5%		11.7%	50.0%	
Maximum Green (s)	7.5	30.0		8.5	31.0		6.5	51.0		10.0	54.0	
Yellow Time (s)	3.5	3.7		3.5	3.7		3.5	4.6		3.0	4.6	
All-Red Time (s)	1.0	2.3		1.0	2.3		1.0	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.0		4.5	6.0		4.5	6.0		4.0	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	34.7	25.7		36.2	26.4		56.4	48.4		62.6	53.3	
Actuated g/C Ratio	0.31	0.23		0.32	0.24		0.50	0.43		0.56	0.47	
v/c Ratio	0.56	0.86		0.61	0.85		0.48	0.75		0.67	0.72	
Control Delay	36.4	59.5		38.4	57.2		24.1	30.1		35.8	27.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.4	59.5		38.4	57.2		24.1	30.1		35.8	27.3	
LOS	D	E		D	E		C	C		D	C	
Approach Delay		53.5			52.1			29.7			28.0	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 112.3
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 34.6
 Intersection LOS: C
 Intersection Capacity Utilization 77.8%
 ICU Level of Service D
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E

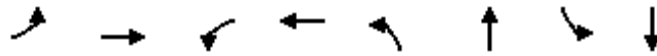


Queues

Future Total 2036

1: Trafalgar Road & Burnhamthorpe Road E

AM Peak Hour



























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	129	366	135	358	80	1425	146	1499
v/c Ratio	0.56	0.86	0.61	0.85	0.48	0.75	0.67	0.72
Control Delay	36.4	59.5	38.4	57.2	24.1	30.1	35.8	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.4	59.5	38.4	57.2	24.1	30.1	35.8	27.3
Queue Length 50th (m)	20.4	76.1	21.4	72.9	8.1	112.7	15.9	116.9
Queue Length 95th (m)	34.5	#119.2	36.0	#114.5	17.7	136.6	#42.1	141.1
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	231	500	228	498	170	2023	232	2129
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.73	0.59	0.72	0.47	0.70	0.63	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2036
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Traffic Volume (vph)	123	219	128	128	203	137	76	1198	156	139	1366	58
Future Volume (vph)	123	219	128	128	203	137	76	1198	156	139	1366	58
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.0		4.5	6.0		4.5	6.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.94		1.00	0.94		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1825	1788		1807	1713		1772	4362		1825	4368	
Flt Permitted	0.23	1.00		0.19	1.00		0.08	1.00		0.08	1.00	
Satd. Flow (perm)	448	1788		364	1713		150	4362		144	4368	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	129	231	135	135	214	144	80	1261	164	146	1438	61
RTOR Reduction (vph)	0	18	0	0	21	0	0	11	0	0	3	0
Lane Group Flow (vph)	129	348	0	135	337	0	80	1414	0	146	1496	0
Heavy Vehicles (%)	0%	0%	4%	1%	7%	3%	3%	4%	3%	0%	5%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	33.2	25.7		34.8	26.5		54.7	49.7		62.4	53.3	
Effective Green, g (s)	33.2	25.7		34.8	26.5		54.7	49.7		62.4	53.3	
Actuated g/C Ratio	0.29	0.23		0.31	0.23		0.48	0.44		0.55	0.47	
Clearance Time (s)	4.5	6.0		4.5	6.0		4.5	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	222	405		217	400		143	1913		214	2054	
v/s Ratio Prot	0.04	0.19		c0.05	c0.20		0.02	0.32		c0.05	c0.34	
v/s Ratio Perm	0.13			0.15			0.24			0.32		
v/c Ratio	0.58	0.86		0.62	0.84		0.56	0.74		0.68	0.73	
Uniform Delay, d1	31.6	42.1		30.9	41.4		19.0	26.4		19.6	24.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	16.4		5.5	14.9		4.7	1.9		8.7	1.6	
Delay (s)	35.4	58.5		36.3	56.3		23.7	28.3		28.3	25.8	
Level of Service	D	E		D	E		C	C		C	C	
Approach Delay (s)		52.5			50.8			28.0			26.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM 2000 Control Delay			32.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			113.3				Sum of lost time (s)			21.0		
Intersection Capacity Utilization			77.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1121	2	275	635	1	657
Future Volume (vph)	1121	2	275	635	1	657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.985		
Satd. Flow (prot)	1902	0	0	1814	1629	0
Fl _t Permitted				0.985		
Satd. Flow (perm)	1902	0	0	1814	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1232	2	302	698	1	722
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1234	0	0	1000	723	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	158.5%
ICU Level of Service	H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	1121	2	275	635	1	657
Future Volume (Veh/h)	1121	2	275	635	1	657
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1232	2	302	698	1	722
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1234		2535	1233
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1234		2535	1233
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			46		93	0
cM capacity (veh/h)			554		14	216
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1234	1000	723			
Volume Left	0	302	1			
Volume Right	2	0	722			
cSH	1700	554	211			
Volume to Capacity	0.73	0.54	3.42			
Queue Length 95th (m)	0.0	24.7	Err			
Control Delay (s)	0.0	18.0	Err			
Lane LOS	C		F			
Approach Delay (s)	0.0	18.0	Err			
Approach LOS	C		F			
Intersection Summary						
Average Delay			2450.9			
Intersection Capacity Utilization			158.5%	ICU Level of Service		H
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: Street D & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	450	22	4	348	65	13
Future Volume (vph)	450	22	4	348	65	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994			0.978		
Flt Protected				0.999	0.960	
Satd. Flow (prot)	1874	0	0	1792	1804	0
Flt Permitted				0.999	0.960	
Satd. Flow (perm)	1874	0	0	1792	1804	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	1285.0			61.8	390.4	
Travel Time (s)	77.1			3.7	28.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%
Bus Blockages (#/hr)	0	0	0	5	0	0
Adj. Flow (vph)	489	24	4	378	71	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	513	0	0	382	85	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
4: Street D & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	450	22	4	348	65	13
Future Volume (Veh/h)	450	22	4	348	65	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	489	24	4	378	71	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			513			501
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			513			501
tC, single (s)			4.1			6.2
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			100			98
cM capacity (veh/h)			1063			574
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	513	382	85			
Volume Left	0	4	71			
Volume Right	24	0	14			
cSH	1700	1063	341			
Volume to Capacity	0.30	0.00	0.25			
Queue Length 95th (m)	0.0	0.1	7.3			
Control Delay (s)	0.0	0.1	19.0			
Lane LOS			A	C		
Approach Delay (s)	0.0	0.1	19.0			
Approach LOS			C			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			36.1%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Street E & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	458	5	4	337	15	13
Future Volume (vph)	458	5	4	337	15	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.937		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1882	0	0	1792	1753	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1882	0	0	1792	1753	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	61.8			77.9	258.1	
Travel Time (s)	3.7			4.7	18.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%
Bus Blockages (#/hr)	0	0	0	5	0	0
Adj. Flow (vph)	498	5	4	366	16	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	503	0	0	370	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
5: Street E & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	458	5	4	337	15	13
Future Volume (Veh/h)	458	5	4	337	15	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	498	5	4	366	16	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			503			500
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			503			500
tC, single (s)			4.1			6.2
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			100			98
cM capacity (veh/h)			1072			574
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	503	370	30			
Volume Left	0	4	16			
Volume Right	5	0	14			
cSH	1700	1072	405			
Volume to Capacity	0.30	0.00	0.07			
Queue Length 95th (m)	0.0	0.1	1.8			
Control Delay (s)	0.0	0.1	14.6			
Lane LOS			A			B
Approach Delay (s)	0.0	0.1	14.6			
Approach LOS			B			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			34.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Street A & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	445	26	70	264	78	193
Future Volume (vph)	445	26	70	264	78	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993			0.850		
Flt Protected				0.990	0.950	
Satd. Flow (prot)	1872	0	0	1793	1825	1633
Flt Permitted				0.990	0.950	
Satd. Flow (perm)	1872	0	0	1793	1825	1633
Link Speed (k/h)	60			60	50	
Link Distance (m)	77.9			255.2	573.1	
Travel Time (s)	4.7			15.3	41.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%
Bus Blockages (#/hr)	0	0	0	5	0	0
Adj. Flow (vph)	484	28	76	287	85	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	0	0	363	85	210
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.1% ICU Level of Service B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Street A & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (veh/h)	445	26	70	264	78	193
Future Volume (Veh/h)	445	26	70	264	78	193
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	484	28	76	287	85	210
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			512		937	498
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			512		937	498
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		69	64
cM capacity (veh/h)			1064		275	576
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	512	363	85	210		
Volume Left	0	76	85	0		
Volume Right	28	0	0	210		
cSH	1700	1064	275	576		
Volume to Capacity	0.30	0.07	0.31	0.36		
Queue Length 95th (m)	0.0	1.8	9.7	12.6		
Control Delay (s)	0.0	2.4	23.8	14.8		
Lane LOS		A	C	B		
Approach Delay (s)	0.0	2.4	17.4			
Approach LOS			C			
Intersection Summary						
Average Delay			5.1			
Intersection Capacity Utilization			57.1%	ICU Level of Service	B	
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Street L & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	633	5	4	320	15	13
Future Volume (vph)	633	5	4	320	15	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.999			0.937		
Fl _t Protected				0.999	0.974	
Satd. Flow (prot)	1882	0	0	1792	1753	0
Fl _t Permitted				0.999	0.974	
Satd. Flow (perm)	1882	0	0	1792	1753	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	255.2			188.5	159.1	
Travel Time (s)	15.3			11.3	11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%
Bus Blockages (#/hr)	0	0	0	5	0	0
Adj. Flow (vph)	688	5	4	348	16	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	693	0	0	352	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	1.01	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.6%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
7: Street L & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	633	5	4	320	15	13
Future Volume (Veh/h)	633	5	4	320	15	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	688	5	4	348	16	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			693	1046		690
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			693	1046		690
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	94		97
cM capacity (veh/h)			912	254		448
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	693	352	30			
Volume Left	0	4	16			
Volume Right	5	0	14			
cSH	1700	912	318			
Volume to Capacity	0.41	0.00	0.09			
Queue Length 95th (m)	0.0	0.1	2.4			
Control Delay (s)	0.0	0.2	17.5			
Lane LOS			A	C		
Approach Delay (s)	0.0	0.2	17.5			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			43.6%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2036
 AM Peak Hour

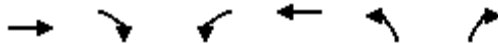


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	641	5	4	309	15	13
Future Volume (vph)	641	5	4	309	15	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.937		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1867	0	0	1792	1753	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1867	0	0	1792	1753	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	188.5			150.3	193.3	
Travel Time (s)	11.3			9.0	13.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%
Bus Blockages (#/hr)	2	0	0	5	0	0
Adj. Flow (vph)	697	5	4	336	16	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	0	340	30	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	0.99	0.99	1.01	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.0% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2036
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	641	5	4	309	15	13
Future Volume (Veh/h)	641	5	4	309	15	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	697	5	4	336	16	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			702	1044		700
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			702	1044		700
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	94		97
cM capacity (veh/h)			905	255		443
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	702	340	30			
Volume Left	0	4	16			
Volume Right	5	0	14			
cSH	1700	905	318			
Volume to Capacity	0.41	0.00	0.09			
Queue Length 95th (m)	0.0	0.1	2.4			
Control Delay (s)	0.0	0.2	17.5			
Lane LOS			A		C	
Approach Delay (s)	0.0	0.2	17.5			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			44.0%		ICU Level of Service A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Street N (East Leg) & Burnhamthorpe Road E

Future Total 2036
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	652	2	2	306	7	7
Future Volume (vph)	652	2	2	306	7	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932	
Fl _t Protected					0.976	
Satd. Flow (prot)	1868	0	0	1794	1748	0
Fl _t Permitted					0.976	
Satd. Flow (perm)	1868	0	0	1794	1748	0
Link Speed (k/h)	60			40	50	
Link Distance (m)	150.3			297.0	429.6	
Travel Time (s)	9.0			26.7	30.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	5%	0%	0%
Bus Blockages (#/hr)	2	0	0	5	0	0
Adj. Flow (vph)	709	2	2	333	8	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	711	0	0	335	16	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	0.99	0.99	1.01	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis
 9: Street N (East Leg) & Burnhamthorpe Road E

Future Total 2036
 AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	652	2	2	306	7	7
Future Volume (Veh/h)	652	2	2	306	7	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	709	2	2	333	8	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			711		1047	710
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			711		1047	710
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	98
cM capacity (veh/h)			898		254	437
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	711	335	16			
Volume Left	0	2	8			
Volume Right	2	0	8			
cSH	1700	898	321			
Volume to Capacity	0.42	0.00	0.05			
Queue Length 95th (m)	0.0	0.1	1.2			
Control Delay (s)	0.0	0.1	16.8			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	16.8			
Approach LOS			C			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			44.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	304	72	164	246	120	103	1665	210	138	1142	107
Future Volume (vph)	99	304	72	164	246	120	103	1665	210	138	1142	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	30.0		0.0	15.0		0.0	70.0		0.0	55.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	2.5			2.5			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	0.91	1.00	*0.80	0.91
Frt		0.971			0.951			0.983			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1829	0	1807	1792	0	1789	4448	0	1772	4390	0
Flt Permitted	0.301			0.292			0.098			0.070		
Satd. Flow (perm)	556	1829	0	555	1792	0	185	4448	0	131	4390	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			21			22			14	
Link Speed (k/h)		60			60			80			80	
Link Distance (m)		414.7			1285.0			939.8			437.1	
Travel Time (s)		24.9			77.1			42.3			19.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Adj. Flow (vph)	104	320	76	173	259	126	108	1753	221	145	1202	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	396	0	173	385	0	108	1974	0	145	1315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings
1: Trafalgar Road & Burnhamthorpe Road E

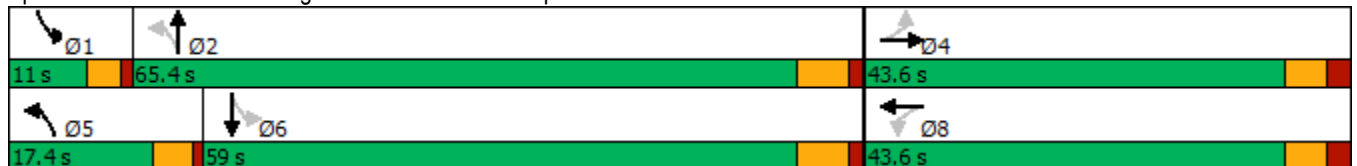
Future Total 2036
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	20.0		7.0	20.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		9.5	26.0		11.0	26.0	
Total Split (s)	43.6	43.6		43.6	43.6		17.4	65.4		11.0	59.0	
Total Split (%)	36.3%	36.3%		36.3%	36.3%		14.5%	54.5%		9.2%	49.2%	
Maximum Green (s)	37.6	37.6		37.6	37.6		12.9	59.4		7.0	53.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.5	4.6		3.0	4.6	
All-Red Time (s)	2.3	2.3		2.3	2.3		1.0	1.4		1.0	1.4	
Lost Time Adjust (s)	0.0	0.0		-1.0	0.0		0.0	-1.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0		5.0	6.0		4.5	5.0		4.0	6.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)	37.6	37.6		38.6	37.6		69.5	60.4		66.1	57.1	
Actuated g/C Ratio	0.31	0.31		0.32	0.31		0.58	0.50		0.55	0.48	
v/c Ratio	0.60	0.68		0.97	0.67		0.48	0.88		0.86	0.63	
Control Delay	51.3	42.2		102.3	40.5		17.7	31.9		66.1	25.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	51.3	42.2		102.3	40.5		17.7	31.9		66.1	25.2	
LOS	D	D		F	D		B	C		E	C	
Approach Delay		44.1			59.6			31.1			29.2	
Approach LOS		D			E			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 35.4
 Intersection LOS: D
 Intersection Capacity Utilization 90.6%
 ICU Level of Service E
 Analysis Period (min) 15
 * User Entered Value

Splits and Phases: 1: Trafalgar Road & Burnhamthorpe Road E



Queues
1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	396	173	385	108	1974	145	1315
v/c Ratio	0.60	0.68	0.97	0.67	0.48	0.88	0.86	0.63
Control Delay	51.3	42.2	102.3	40.5	17.7	31.9	66.1	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	42.2	102.3	40.5	17.7	31.9	66.1	25.2
Queue Length 50th (m)	20.6	79.3	40.0	74.5	10.2	165.2	17.8	92.4
Queue Length 95th (m)	#42.2	114.2	#85.1	108.7	18.0	191.7	#56.5	116.4
Internal Link Dist (m)		390.7		1261.0		915.8		413.1
Turn Bay Length (m)	30.0		15.0		70.0		55.0	
Base Capacity (vph)	174	579	178	575	283	2249	168	2097
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.68	0.97	0.67	0.38	0.88	0.86	0.63

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 1: Trafalgar Road & Burnhamthorpe Road E

Future Total 2036
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	304	72	164	246	120	103	1665	210	138	1142	107
Future Volume (vph)	99	304	72	164	246	120	103	1665	210	138	1142	107
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		5.0	6.0		4.5	5.0		4.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80		1.00	*0.80	
Frt	1.00	0.97		1.00	0.95		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1755	1829		1807	1792		1789	4449		1772	4391	
Flt Permitted	0.30	1.00		0.29	1.00		0.10	1.00		0.07	1.00	
Satd. Flow (perm)	555	1829		556	1792		184	4449		131	4391	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	320	76	173	259	126	108	1753	221	145	1202	113
RTOR Reduction (vph)	0	7	0	0	14	0	0	11	0	0	7	0
Lane Group Flow (vph)	104	389	0	173	371	0	108	1963	0	145	1308	0
Heavy Vehicles (%)	4%	2%	2%	1%	0%	6%	2%	2%	1%	3%	4%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.6	37.6		37.6	37.6		68.2	59.4		64.1	57.1	
Effective Green, g (s)	37.6	37.6		38.6	37.6		68.2	60.4		64.1	57.1	
Actuated g/C Ratio	0.31	0.31		0.32	0.31		0.57	0.50		0.53	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.5	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	173	573		178	561		222	2239		165	2089	
v/s Ratio Prot		0.21			0.21		c0.04	c0.44		c0.05	0.30	
v/s Ratio Perm	0.19			c0.31			0.24			0.42		
v/c Ratio	0.60	0.68		0.97	0.66		0.49	0.88		0.88	0.63	
Uniform Delay, d1	34.9	35.9		40.2	35.7		15.5	26.5		27.6	23.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.8	3.2		58.9	2.9		1.7	4.6		37.2	0.8	
Delay (s)	40.6	39.1		99.0	38.6		17.2	31.1		64.8	24.3	
Level of Service	D	D		F	D		B	C		E	C	
Approach Delay (s)		39.4			57.3			30.3			28.3	
Approach LOS		D			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			34.0				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			90.6%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	708	3	554	1533	0	643
Future Volume (vph)	708	3	554	1533	0	643
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.987		
Satd. Flow (prot)	1864	0	0	1882	1645	0
Flt Permitted				0.987		
Satd. Flow (perm)	1864	0	0	1882	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	730	3	571	1580	0	663
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	0	0	2151	663	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	198.6%
ICU Level of Service	H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	708	3	554	1533	0	643
Future Volume (Veh/h)	708	3	554	1533	0	643
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	730	3	571	1580	0	663
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			733		3454	732
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			733		3454	732
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			35		100	0
cM capacity (veh/h)			881		3	423
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	733	2151	663			
Volume Left	0	571	0			
Volume Right	3	0	663			
cSH	1700	881	423			
Volume to Capacity	0.43	0.65	1.57			
Queue Length 95th (m)	0.0	37.3	279.3			
Control Delay (s)	0.0	16.3	290.3			
Lane LOS		C	F			
Approach Delay (s)	0.0	16.3	290.3			
Approach LOS			F			
Intersection Summary						
Average Delay			64.1			
Intersection Capacity Utilization			198.6%	ICU Level of Service		H
Analysis Period (min)			15			

Lanes, Volumes, Timings
4: Street D & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	604	58	14	441	49	9
Future Volume (vph)	604	58	14	441	49	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988			0.979		
Flt Protected				0.998	0.960	
Satd. Flow (prot)	1881	0	0	1917	1806	0
Flt Permitted				0.998	0.960	
Satd. Flow (perm)	1881	0	0	1917	1806	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	1285.0			61.8	390.4	
Travel Time (s)	77.1			3.7	28.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	657	63	15	479	53	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	720	0	0	494	63	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.3%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
4: Street D & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	604	58	14	441	49	9
Future Volume (Veh/h)	604	58	14	441	49	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	657	63	15	479	53	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			720		1198	688
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			720		1198	688
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		74	98
cM capacity (veh/h)			891		204	449
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	720	494	63			
Volume Left	0	15	53			
Volume Right	63	0	10			
cSH	1700	891	223			
Volume to Capacity	0.42	0.02	0.28			
Queue Length 95th (m)	0.0	0.4	8.5			
Control Delay (s)	0.0	0.5	27.4			
Lane LOS		A	D			
Approach Delay (s)	0.0	0.5	27.4			
Approach LOS			D			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			45.3%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Street E & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	597	16	14	445	10	9
Future Volume (vph)	597	16	14	445	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997			0.936		
Flt Protected				0.998	0.974	
Satd. Flow (prot)	1897	0	0	1917	1751	0
Flt Permitted				0.998	0.974	
Satd. Flow (perm)	1897	0	0	1917	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	61.8			77.9	258.1	
Travel Time (s)	3.7			4.7	18.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	649	17	15	484	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	666	0	0	499	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.7%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
5: Street E & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	597	16	14	445	10	9
Future Volume (Veh/h)	597	16	14	445	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	649	17	15	484	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			666		1172	658
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			666		1172	658
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	98
cM capacity (veh/h)			933		211	468
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	666	499	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	933	286			
Volume to Capacity	0.39	0.02	0.07			
Queue Length 95th (m)	0.0	0.4	1.8			
Control Delay (s)	0.0	0.5	18.6			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.5	18.6			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			44.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
6: Street A & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	520	84	192	406	52	140
Future Volume (vph)	520	84	192	406	52	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981			0.850		
Flt Protected				0.984	0.950	
Satd. Flow (prot)	1869	0	0	1890	1825	1633
Flt Permitted				0.984	0.950	
Satd. Flow (perm)	1869	0	0	1890	1825	1633
Link Speed (k/h)	60			60	50	
Link Distance (m)	77.9			255.2	573.1	
Travel Time (s)	4.7			15.3	41.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	565	91	209	441	57	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	656	0	0	650	57	152
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	77.8%
	ICU Level of Service D
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
6: Street A & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→	↘	↙	←	↘	↙
Traffic Volume (veh/h)	520	84	192	406	52	140
Future Volume (Veh/h)	520	84	192	406	52	140
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	565	91	209	441	57	152
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			656		1470	610
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			656		1470	610
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			78		48	69
cM capacity (veh/h)			941		110	498
Direction, Lane #	EB 1	WB 1	NB 1	NB 2		
Volume Total	656	650	57	152		
Volume Left	0	209	57	0		
Volume Right	91	0	0	152		
cSH	1700	941	110	498		
Volume to Capacity	0.39	0.22	0.52	0.31		
Queue Length 95th (m)	0.0	6.5	18.0	9.7		
Control Delay (s)	0.0	5.2	68.3	15.4		
Lane LOS		A	F	C		
Approach Delay (s)	0.0	5.2	29.8			
Approach LOS			D			
Intersection Summary						
Average Delay			6.3			
Intersection Capacity Utilization			77.8%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings
7: Street L & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	645	16	14	588	10	9
Future Volume (vph)	645	16	14	588	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997			0.936		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1897	0	0	1919	1751	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1897	0	0	1919	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	255.2			188.5	159.1	
Travel Time (s)	15.3			11.3	11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	701	17	15	639	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	718	0	0	654	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.2%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
7: Street L & Burnhamthorpe Road E

Future Total 2036
PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	645	16	14	588	10	9
Future Volume (Veh/h)	645	16	14	588	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	701	17	15	639	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			718		1378	710
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			718		1378	710
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		93	98
cM capacity (veh/h)			892		158	437
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	718	654	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	892	227			
Volume to Capacity	0.42	0.02	0.09			
Queue Length 95th (m)	0.0	0.4	2.3			
Control Delay (s)	0.0	0.4	22.4			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	22.4			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			52.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2036
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	638	16	14	593	10	9
Future Volume (vph)	638	16	14	593	10	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997			0.936		
Flt Protected				0.999	0.974	
Satd. Flow (prot)	1897	0	0	1919	1751	0
Flt Permitted				0.999	0.974	
Satd. Flow (perm)	1897	0	0	1919	1751	0
Link Speed (k/h)	60			60	50	
Link Distance (m)	188.5			150.3	193.3	
Travel Time (s)	11.3			9.0	13.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	693	17	15	645	11	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	710	0	0	660	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 8: Street N (West Leg) & Burnhamthorpe Road E

Future Total 2036
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	638	16	14	593	10	9
Future Volume (Veh/h)	638	16	14	593	10	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	693	17	15	645	11	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			710		1376	702
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			710		1376	702
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		93	98
cM capacity (veh/h)			899		159	442
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	710	660	21			
Volume Left	0	15	11			
Volume Right	17	0	10			
cSH	1700	899	228			
Volume to Capacity	0.42	0.02	0.09			
Queue Length 95th (m)	0.0	0.4	2.3			
Control Delay (s)	0.0	0.4	22.3			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	22.3			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			52.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Street N (East Leg) & Burnhamthorpe Road E

Future Total 2036
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	638	8	7	602	5	4
Future Volume (vph)	638	8	7	602	5	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998			0.940		
Flt Protected				0.999	0.973	
Satd. Flow (prot)	1899	0	0	1919	1757	0
Flt Permitted				0.999	0.973	
Satd. Flow (perm)	1899	0	0	1919	1757	0
Link Speed (k/h)	60			40	50	
Link Distance (m)	150.3			297.0	429.6	
Travel Time (s)	9.0			26.7	30.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	693	9	8	654	5	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	0	662	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.3%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 9: Street N (East Leg) & Burnhamthorpe Road E

Future Total 2036
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Traffic Volume (veh/h)	638	8	7	602	5	4
Future Volume (Veh/h)	638	8	7	602	5	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	693	9	8	654	5	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			702	1368		698
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			702	1368		698
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			99	97		99
cM capacity (veh/h)			905	162		444
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	702	662	9			
Volume Left	0	8	5			
Volume Right	9	0	4			
cSH	1700	905	226			
Volume to Capacity	0.41	0.01	0.04			
Queue Length 95th (m)	0.0	0.2	0.9			
Control Delay (s)	0.0	0.2	21.6			
Lane LOS	A		C			
Approach Delay (s)	0.0	0.2	21.6			
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			47.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2036 - Widening Only
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↔	
Traffic Volume (vph)	1121	2	186	635	1	405
Future Volume (vph)	1121	2	186	635	1	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.989		
Satd. Flow (prot)	3614	0	0	3464	1629	0
Fl _t Permitted				0.989		
Satd. Flow (perm)	3614	0	0	3464	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1232	2	204	698	1	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1234	0	0	902	446	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	89.1%
ICU Level of Service	E
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis Future Background 2036 - Widening Only
 2: Burnhamthorpe Road E & William Halton Parkway AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	1121	2	186	635	1	405
Future Volume (Veh/h)	1121	2	186	635	1	405
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1232	2	204	698	1	445
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1234		1990	617
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1234		1990	617
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			63		97	0
cM capacity (veh/h)			544		34	433
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	821	413	437	465	446	
Volume Left	0	0	204	0	1	
Volume Right	0	2	0	0	445	
cSH	1700	1700	544	1700	422	
Volume to Capacity	0.48	0.24	0.37	0.27	1.06	
Queue Length 95th (m)	0.0	0.0	13.1	0.0	110.5	
Control Delay (s)	0.0	0.0	10.9	0.0	91.6	
Lane LOS	B			F		
Approach Delay (s)	0.0		5.3		91.6	
Approach LOS				F		
Intersection Summary						
Average Delay			17.6			
Intersection Capacity Utilization			89.1%	ICU Level of Service	E	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Background 2036 - Widening Only
 PM Peak Hour

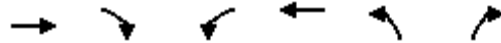


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (vph)	708	3	299	1533	0	464
Future Volume (vph)	708	3	299	1533	0	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.992		
Satd. Flow (prot)	3541	0	0	3591	1645	0
Flt Permitted				0.992		
Satd. Flow (perm)	3541	0	0	3591	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	730	3	308	1580	0	478
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	0	0	1888	478	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	109.5%
ICU Level of Service	H
Analysis Period (min)	15

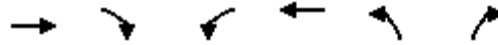
HCM Unsignalized Intersection Capacity Analysis Future Background 2036 - Widening Only
 2: Burnhamthorpe Road E & William Halton Parkway PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	708	3	299	1533	0	464
Future Volume (Veh/h)	708	3	299	1533	0	464
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	730	3	308	1580	0	478
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			733		2138	366
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			733		2138	366
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			65		100	25
cM capacity (veh/h)			881		28	633
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	487	246	835	1053	478	
Volume Left	0	0	308	0	0	
Volume Right	0	3	0	0	478	
cSH	1700	1700	881	1700	633	
Volume to Capacity	0.29	0.14	0.35	0.62	0.75	
Queue Length 95th (m)	0.0	0.0	12.0	0.0	51.9	
Control Delay (s)	0.0	0.0	7.8	0.0	26.0	
Lane LOS			A	D		
Approach Delay (s)	0.0		3.4		26.0	
Approach LOS					D	
Intersection Summary						
Average Delay			6.1			
Intersection Capacity Utilization			109.5%	ICU Level of Service	H	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036 - Widening Only
 AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (vph)	1121	2	275	635	1	657
Future Volume (vph)	1121	2	275	635	1	657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr _t					0.865	
Fl _t Protected				0.985		
Satd. Flow (prot)	3614	0	0	3447	1629	0
Fl _t Permitted				0.985		
Satd. Flow (perm)	3614	0	0	3447	1629	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1232	2	302	698	1	722
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1234	0	0	1000	723	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	107.3%
ICU Level of Service	G
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036 - Widening Only
AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	1121	2	275	635	1	657
Future Volume (Veh/h)	1121	2	275	635	1	657
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1232	2	302	698	1	722
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1234		2186	617
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1234		2186	617
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			44		94	0
cM capacity (veh/h)			544		18	433
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	821	413	535	465	723	
Volume Left	0	0	302	0	1	
Volume Right	0	2	0	0	722	
cSH	1700	1700	544	1700	419	
Volume to Capacity	0.48	0.24	0.56	0.27	1.72	
Queue Length 95th (m)	0.0	0.0	25.6	0.0	335.2	
Control Delay (s)	0.0	0.0	16.5	0.0	358.8	
Lane LOS	C			F		
Approach Delay (s)	0.0		8.8		358.8	
Approach LOS				F		
Intersection Summary						
Average Delay			90.7			
Intersection Capacity Utilization			107.3%	ICU Level of Service	G	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036 - Widening Only
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (vph)	708	3	554	1533	0	643
Future Volume (vph)	708	3	554	1533	0	643
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt	0.999			0.865		
Flt Protected				0.987		
Satd. Flow (prot)	3541	0	0	3576	1645	0
Flt Permitted				0.987		
Satd. Flow (perm)	3541	0	0	3576	1645	0
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	730	3	571	1580	0	663
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	0	0	2151	663	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

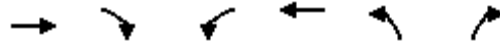
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	127.9%
	ICU Level of Service H
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 2: Burnhamthorpe Road E & William Halton Parkway

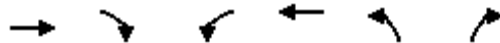
Future Total 2036 - Widening Only
 PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	708	3	554	1533	0	643
Future Volume (Veh/h)	708	3	554	1533	0	643
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	730	3	571	1580	0	663
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			733		2664	366
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			733		2664	366
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			35		100	0
cM capacity (veh/h)			881		7	633
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	487	246	1098	1053	663	
Volume Left	0	0	571	0	0	
Volume Right	0	3	0	0	663	
cSH	1700	1700	881	1700	633	
Volume to Capacity	0.29	0.14	0.65	0.62	1.05	
Queue Length 95th (m)	0.0	0.0	37.3	0.0	134.7	
Control Delay (s)	0.0	0.0	15.8	0.0	74.0	
Lane LOS	C			F		
Approach Delay (s)	0.0		8.1		74.0	
Approach LOS				F		
Intersection Summary						
Average Delay			18.7			
Intersection Capacity Utilization			127.9%	ICU Level of Service	H	
Analysis Period (min)			15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1121	2	186	635	1	405
Future Volume (vph)	1121	2	186	635	1	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3614	0	1738	3510	1629	0
Flt Permitted			0.108			
Satd. Flow (perm)	3614	0	198	3510	1629	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					333	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1232	2	204	698	1	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1234	0	204	698	446	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	

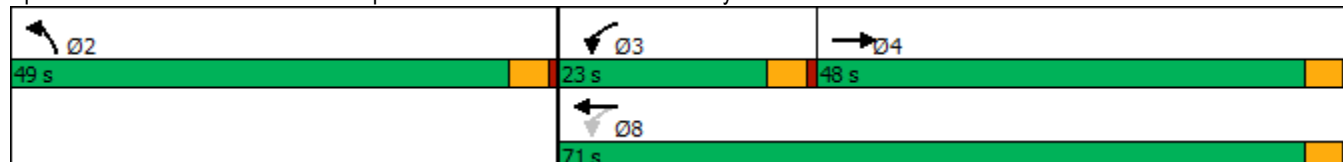


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	48.0		23.0	71.0	49.0	
Total Split (%)	40.0%		19.2%	59.2%	40.8%	
Maximum Green (s)	43.5		18.5	66.5	44.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	35.1		50.6	50.6	12.8	
Actuated g/C Ratio	0.48		0.69	0.69	0.18	
v/c Ratio	0.71		0.56	0.29	0.80	
Control Delay	19.2		16.8	5.2	20.4	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	19.2		16.8	5.2	20.4	
LOS	B		B	A	C	
Approach Delay	19.2			7.8	20.4	
Approach LOS	B			A	C	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	73.1
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	15.4
Intersection LOS:	B
Intersection Capacity Utilization:	77.7%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway



Queues

Future Background 2036 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

AM Peak Hour

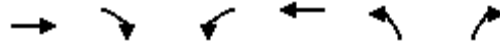


Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1234	204	698	446
v/c Ratio	0.71	0.56	0.29	0.80
Control Delay	19.2	16.8	5.2	20.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.2	16.8	5.2	20.4
Queue Length 50th (m)	62.0	8.0	14.8	13.8
Queue Length 95th (m)	131.9	36.4	35.8	51.9
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	2311	556	3054	1180
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.37	0.23	0.38

Intersection Summary

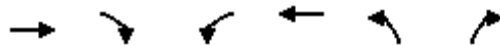
HCM Signalized Intersection Capacity Analysis Background 2036 - Widening and Signalization 2: Burnhamthorpe Road E & William Halton Parkway

AM Peak Hour

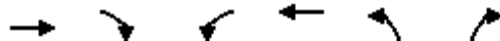


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (vph)	1121	2	186	635	1	405
Future Volume (vph)	1121	2	186	635	1	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3613		1738	3510	1630	
Flt Permitted	1.00		0.11	1.00	1.00	
Satd. Flow (perm)	3613		198	3510	1630	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1232	2	204	698	1	445
RTOR Reduction (vph)	0	0	0	0	274	0
Lane Group Flow (vph)	1234	0	204	698	172	0
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	35.4		50.6	50.6	12.8	
Effective Green, g (s)	35.4		50.6	50.6	12.8	
Actuated g/C Ratio	0.49		0.70	0.70	0.18	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1766		365	2453	288	
v/s Ratio Prot	c0.34		c0.08	0.20	c0.11	
v/s Ratio Perm			0.31			
v/c Ratio	0.70		0.56	0.28	0.60	
Uniform Delay, d1	14.4		10.1	4.1	27.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.2		1.9	0.1	3.3	
Delay (s)	15.6		11.9	4.2	30.7	
Level of Service	B		B	A	C	
Approach Delay (s)	15.6			5.9	30.7	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	72.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	708	3	299	1533	0	464
Future Volume (vph)	708	3	299	1533	0	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3541	0	1825	3614	1645	0
Flt Permitted			0.230			
Satd. Flow (perm)	3541	0	442	3614	1645	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					639	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	730	3	308	1580	0	478
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	0	308	1580	478	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	34.0		45.0	79.0	41.0	
Total Split (%)	28.3%		37.5%	65.8%	34.2%	
Maximum Green (s)	29.5		40.5	74.5	36.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	16.8		32.6	32.6	5.6	
Actuated g/C Ratio	0.35		0.69	0.69	0.12	
v/c Ratio	0.59		0.49	0.64	0.63	
Control Delay	15.0		5.7	5.2	4.6	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	15.0		5.7	5.2	4.6	
LOS	B		A	A	A	
Approach Delay	15.0			5.3	4.6	
Approach LOS	B			A	A	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 47.5
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 7.5
 Intersection LOS: A
 Intersection Capacity Utilization 78.6%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway



Queues

Future Background 2036 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

PM Peak Hour



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	733	308	1580	478
v/c Ratio	0.59	0.49	0.64	0.63
Control Delay	15.0	5.7	5.2	4.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.0	5.7	5.2	4.6
Queue Length 50th (m)	24.3	6.7	26.6	0.0
Queue Length 95th (m)	45.9	14.6	37.0	4.4
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	2253	1580	3614	1430
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.19	0.44	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis Background 2036 - Widening and Signalization 2: Burnhamthorpe Road E & William Halton Parkway

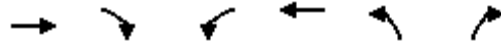
PM Peak Hour



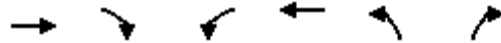
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (vph)	708	3	299	1533	0	464
Future Volume (vph)	708	3	299	1533	0	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.86	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3542		1825	3614	1645	
Flt Permitted	1.00		0.23	1.00	1.00	
Satd. Flow (perm)	3542		441	3614	1645	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	730	3	308	1580	0	478
RTOR Reduction (vph)	0	0	0	0	421	0
Lane Group Flow (vph)	733	0	308	1580	57	0
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	17.0		32.7	32.7	5.6	
Effective Green, g (s)	17.0		32.7	32.7	5.6	
Actuated g/C Ratio	0.36		0.69	0.69	0.12	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1273		632	2498	194	
v/s Ratio Prot	0.21		0.12	c0.44	c0.03	
v/s Ratio Perm			0.22			
v/c Ratio	0.58		0.49	0.63	0.29	
Uniform Delay, d1	12.2		4.0	4.0	19.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.6		0.6	0.5	0.8	
Delay (s)	12.9		4.6	4.5	19.9	
Level of Service	B		A	A	B	
Approach Delay (s)	12.9			4.5	19.9	
Approach LOS	B			A	B	

Intersection Summary

HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1121	2	275	635	1	657
Future Volume (vph)	1121	2	275	635	1	657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt					0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3614	0	1738	3510	1629	0
Flt Permitted			0.087			
Satd. Flow (perm)	3614	0	159	3510	1629	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					333	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Adj. Flow (vph)	1232	2	302	698	1	722
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1234	0	302	698	723	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	

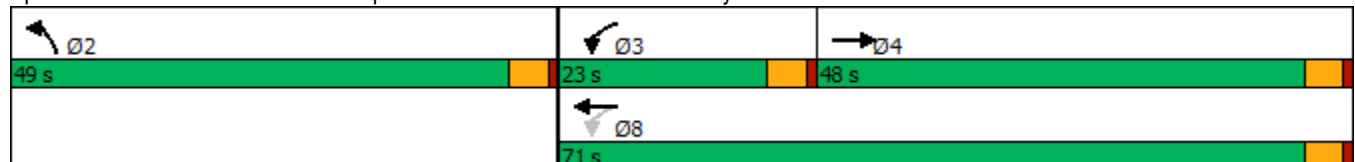


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	48.0		23.0	71.0	49.0	
Total Split (%)	40.0%		19.2%	59.2%	40.8%	
Maximum Green (s)	43.5		18.5	66.5	44.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	41.3		63.5	63.5	37.1	
Actuated g/C Ratio	0.38		0.58	0.58	0.34	
v/c Ratio	0.91		0.88	0.34	0.94	
Control Delay	44.5		56.2	13.7	39.9	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	44.5		56.2	13.7	39.9	
LOS	D		E	B	D	
Approach Delay	44.5			26.5	39.9	
Approach LOS	D			C	D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	109.8
Natural Cycle:	80
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	37.3
Intersection LOS:	D
Intersection Capacity Utilization:	98.3%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway

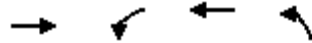


Queues

2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036 - Widening and Signalization

AM Peak Hour



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	1234	302	698	723
v/c Ratio	0.91	0.88	0.34	0.94
Control Delay	44.5	56.2	13.7	39.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.5	56.2	13.7	39.9
Queue Length 50th (m)	145.4	53.7	45.3	95.5
Queue Length 95th (m)	#191.1	#105.7	58.4	#173.9
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	1466	364	2177	871
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.84	0.83	0.32	0.83

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis Future Total 2036 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	1121	2	275	635	1	657
Future Volume (vph)	1121	2	275	635	1	657
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.87	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3613		1738	3510	1629	
Flt Permitted	1.00		0.09	1.00	1.00	
Satd. Flow (perm)	3613		159	3510	1629	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1232	2	302	698	1	722
RTOR Reduction (vph)	0	0	0	0	220	0
Lane Group Flow (vph)	1234	0	302	698	503	0
Heavy Vehicles (%)	1%	0%	5%	4%	0%	2%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	41.4		63.5	63.5	37.1	
Effective Green, g (s)	41.4		63.5	63.5	37.1	
Actuated g/C Ratio	0.38		0.58	0.58	0.34	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1364		345	2033	551	
v/s Ratio Prot	0.34		c0.14	0.20	c0.31	
v/s Ratio Perm			c0.36			
v/c Ratio	0.90		0.88	0.34	0.91	
Uniform Delay, d1	32.2		32.0	12.1	34.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	8.7		21.1	0.1	19.5	
Delay (s)	41.0		53.1	12.2	54.2	
Level of Service	D		D	B	D	
Approach Delay (s)	41.0			24.6	54.2	
Approach LOS	D			C	D	

Intersection Summary

HCM 2000 Control Delay	38.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (vph)	708	3	554	1533	0	643
Future Volume (vph)	708	3	554	1533	0	643
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)		0.0	100.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.865	
Flt Protected			0.950			
Satd. Flow (prot)	3541	0	1825	3614	1645	0
Flt Permitted			0.188			
Satd. Flow (perm)	3541	0	361	3614	1645	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)					639	
Link Speed (k/h)	60			60	40	
Link Distance (m)	953.5			623.8	297.0	
Travel Time (s)	57.2			37.4	26.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Adj. Flow (vph)	730	3	571	1580	0	663
Shared Lane Traffic (%)						
Lane Group Flow (vph)	733	0	571	1580	663	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	30.5		6.1	30.5	6.1	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	1.8		6.1	1.8	6.1	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	28.7			28.7		
Detector 2 Size(m)	1.8			1.8		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	

Lanes, Volumes, Timings
 2: Burnhamthorpe Road E & William Halton Parkway

Future Total 2036 - Widening and Signalization
 PM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Permitted Phases			8			
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		9.5	22.5	22.5	
Total Split (s)	34.0		45.0	79.0	41.0	
Total Split (%)	28.3%		37.5%	65.8%	34.2%	
Maximum Green (s)	29.5		40.5	74.5	36.5	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	4.5		4.5	4.5	4.5	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	None	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	23.1		54.1	54.1	11.2	
Actuated g/C Ratio	0.31		0.72	0.72	0.15	
v/c Ratio	0.68		0.75	0.61	0.84	
Control Delay	29.0		19.6	7.4	14.5	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	29.0		19.6	7.4	14.5	
LOS	C		B	A	B	
Approach Delay	29.0			10.6	14.5	
Approach LOS	C			B	B	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 75.2
 Natural Cycle: 80
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 15.1
 Intersection LOS: B
 Intersection Capacity Utilization 101.4%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 2: Burnhamthorpe Road E & William Halton Parkway

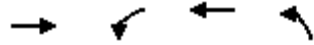


Queues

Future Total 2036 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

PM Peak Hour



Lane Group	EBT	WBL	WBT	NBL
Lane Group Flow (vph)	733	571	1580	663
v/c Ratio	0.68	0.75	0.61	0.84
Control Delay	29.0	19.6	7.4	14.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.0	19.6	7.4	14.5
Queue Length 50th (m)	40.3	35.8	32.5	2.8
Queue Length 95th (m)	100.5	120.0	119.6	40.4
Internal Link Dist (m)	929.5		599.8	273.0
Turn Bay Length (m)		100.0		
Base Capacity (vph)	1528	1137	3237	1175
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.50	0.49	0.56

Intersection Summary

HCM Signalized Intersection Capacity Analysis Future Total 2036 - Widening and Signalization

2: Burnhamthorpe Road E & William Halton Parkway

PM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (vph)	708	3	554	1533	0	643
Future Volume (vph)	708	3	554	1533	0	643
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	
Lane Util. Factor	0.95		1.00	0.95	1.00	
Frt	1.00		1.00	1.00	0.86	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	3542		1825	3614	1645	
Flt Permitted	1.00		0.19	1.00	1.00	
Satd. Flow (perm)	3542		362	3614	1645	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	730	3	571	1580	0	663
RTOR Reduction (vph)	0	0	0	0	543	0
Lane Group Flow (vph)	733	0	571	1580	120	0
Heavy Vehicles (%)	3%	0%	0%	1%	0%	1%
Turn Type	NA		pm+pt	NA	Prot	
Protected Phases	4		3	8	2	
Permitted Phases			8			
Actuated Green, G (s)	23.5		54.1	54.1	11.2	
Effective Green, g (s)	23.5		54.1	54.1	11.2	
Actuated g/C Ratio	0.32		0.73	0.73	0.15	
Clearance Time (s)	4.5		4.5	4.5	4.5	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1120		777	2631	247	
v/s Ratio Prot	0.21		c0.26	0.44	c0.07	
v/s Ratio Perm			c0.28			
v/c Ratio	0.65		0.73	0.60	0.49	
Uniform Delay, d1	21.9		12.0	4.9	28.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.4		3.6	0.4	1.5	
Delay (s)	23.3		15.6	5.3	30.4	
Level of Service	C		B	A	C	
Approach Delay (s)	23.3			8.0	30.4	
Approach LOS	C			A	C	

Intersection Summary

HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	13.5
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

<h1>Junctions 10</h1>
<h2>ARCADY 10 - Roundabout Module</h2>
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Filename: Joshua Creek Dryland TIS - I1.j10

Path: N:\CA\Mississauga\Projects\Legacy\SernasTransTech\Projects\2024\Joshua Creek Dryland TIS\Analysis\Roundabout\Junction 10

Report generation date: 11/20/2024 2:43:20 PM

- »Y-Intercept 100% - 2024 Existing, AM
- »Y-Intercept 100% - 2024 Existing, PM
- »Y-Intercept 100% - 2031 Background, AM
- »Y-Intercept 100% - 2031 Total, AM
- »Y-Intercept 100% - 2031 Background, PM
- »Y-Intercept 100% - 2031 Total, PM
- »Y-Intercept 100% - 2036 Background, AM
- »Y-Intercept 100% - 2036 Total, AM
- »Y-Intercept 100% - 2036 Background, PM
- »Y-Intercept 100% - 2036 Total, PM
- »Y-Intercept 85% - 2024 Existing, AM
- »Y-Intercept 85% - 2024 Existing, PM
- »Y-Intercept 85% - 2031 Background, AM
- »Y-Intercept 85% - 2031 Total, AM
- »Y-Intercept 85% - 2031 Background, PM
- »Y-Intercept 85% - 2031 Total, PM
- »Y-Intercept 85% - 2036 Background, AM
- »Y-Intercept 85% - 2036 Total, AM
- »Y-Intercept 85% - 2036 Background, PM
- »Y-Intercept 85% - 2036 Total, PM

Summary of intersection performance

	AM								PM							
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
Y-Intercept 100% - 2024 Existing																
A - Ninth Line South	A1 DAEX24	0.4	1.2	2.38	0.29	A	2.94	A	A1 DPEX24	1.7	2.8	4.12	0.63	A	3.77	A
B - Burnhamthorpe Road West		0.4	1.5	2.12	0.28	A				1.3	1.4	4.23	0.56	A		
C - Ninth Line North		0.6	2.7	2.82	0.37	A				0.5	2.2	3.64	0.34	A		
D - William Halton Parkway		1.2	1.4	3.84	0.54	A				0.6	2.7	2.60	0.37	A		
Y-Intercept 100% - 2031 Background																
A - Ninth Line South	A1 DAFB31	0.6	2.9	3.05	0.39	A	4.36	A	A1 DPFB31	4.6	19.6	9.74	0.82	A	7.39	A
B - Burnhamthorpe Road West		0.6	2.8	2.60	0.38	A				3.0	8.7	8.58	0.76	A		
C - Ninth Line North		1.0	1.5	3.91	0.50	A				0.9	3.4	5.31	0.47	A		
D - William Halton Parkway		2.5	4.6	6.45	0.72	A				1.2	1.5	3.76	0.55	A		
Y-Intercept 100% - 2031 Total																
A - Ninth Line South	A1 DAFT31	0.8	3.0	3.67	0.44	A	7.10	A	A1 DPFT31	7.7	39.2	16.72	0.89	C	12.47	B
B - Burnhamthorpe Road West		0.7	2.8	2.91	0.42	A				6.5	32.4	17.13	0.88	C		
C - Ninth Line North		1.2	1.5	4.31	0.54	A				1.7	3.5	8.21	0.63	A		
D - William Halton Parkway		5.7	28.6	12.58	0.86	B				1.8	3.0	4.71	0.64	A		
Y-Intercept 100% - 2036 Background																
A - Ninth Line South	A1 DAFB36	0.8	2.7	3.47	0.45	A	5.86	A	A1 DPFB36	11.8	65.4	23.87	0.93	C	15.70	C
B - Burnhamthorpe Road West		0.7	2.8	2.87	0.42	A				7.2	36.3	19.13	0.89	C		
C - Ninth Line North		1.3	1.4	4.63	0.56	A				1.3	3.4	7.21	0.57	A		
D - William Halton Parkway		4.1	16.9	9.81	0.81	A				1.5	2.3	4.38	0.61	A		
Y-Intercept 100% - 2036 Total																
A - Ninth Line South	A1 DAFT36	1.0	2.3	4.28	0.50	A	14.72	B	A1 DPFT36	37.0	116.6	66.95	1.01	F	42.36	E
B - Burnhamthorpe Road West		0.9	2.2	3.26	0.46	A				28.2	98.9	63.02	1.01	F		
C - Ninth Line North		1.5	1.9	5.20	0.60	A				2.6	8.4	12.21	0.73	B		
D - William Halton Parkway		14.9	78.6	31.45	0.95	D				2.3	4.5	5.71	0.70	A		
Y-Intercept 85% - 2024 Existing																
A - Ninth Line South	A2 DAEX24	0.6	2.6	3.27	0.36	A	4.48	A	A2 DPEX24	3.2	9.3	8.03	0.77	A	6.97	A
B - Burnhamthorpe Road West		0.5	2.3	2.83	0.34	A				2.6	6.1	8.63	0.72	A		
C - Ninth Line North		0.8	2.4	3.98	0.45	A				0.8	3.4	5.88	0.45	A		
D - William Halton Parkway		2.0	3.0	6.50	0.67	A				0.8	2.3	3.57	0.44	A		
Y-Intercept 85% - 2031 Background																
A - Ninth Line South	A2 DAFB31	1.0	2.2	4.67	0.50	A	10.31	B	A2 DPFB31	46.8	121.0	90.37	1.03	F	49.04	E
B - Burnhamthorpe Road West		0.9	2.2	3.74	0.47	A				18.2	79.7	51.56	0.98	F		
C - Ninth Line North		1.7	2.0	6.56	0.63	A				1.8	5.0	10.87	0.65	B		

D - William Halton Parkway		7.4	37.3	19.90	0.89	C				2.0	3.4	6.21	0.67	A		
Y-Intercept 85% - 2031 Total																
A - Ninth Line South	A2 DAFT31	1.2	1.7	5.72	0.55	A	51.06	F	A2 DPFT31	116.4	186.4	213.79	1.14	F	112.91	F
B - Burnhamthorpe Road West		1.1	1.5	4.36	0.52	A				59.7	124.9	140.18	1.07	F		
C - Ninth Line North		2.1	2.9	7.78	0.68	A				3.9	18.9	19.89	0.81	C		
D - William Halton Parkway		63.9	135.4	122.40	1.06	F				3.5	12.2	9.21	0.78	A		
Y-Intercept 85% - 2036 Background																
A - Ninth Line South	A2 DAFB36	1.3	1.5	5.56	0.56	A	30.06	D	A2 DPFB36	153.8	200.0	267.84	1.18	F	132.91	F
B - Burnhamthorpe Road West		1.1	1.5	4.33	0.52	A				52.9	119.2	122.07	1.06	F		
C - Ninth Line North		2.4	5.9	8.87	0.71	A				2.6	10.4	14.79	0.73	B		
D - William Halton Parkway		32.3	102.8	73.29	1.01	F				2.8	6.8	8.03	0.74	A		
Y-Intercept 85% - 2036 Total																
A - Ninth Line South	A2 DAFT36	1.4	1.7	6.13	0.59	A	121.46	F	A2 DPFT36	235.8	235.8	496.92	1.31	F	255.79	F
B - Burnhamthorpe Road West		1.3	1.5	5.03	0.57	A				111.8	191.9	308.93	1.15	F		
C - Ninth Line North		3.2	12.9	11.23	0.77	B				6.3	34.1	30.12	0.88	D		
D - William Halton Parkway		156.1	200.0	303.86	1.19	F				5.4	27.1	13.72	0.85	B		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

File summary

File Description

Title	Joshua Creek Dryland TIS
Location	Oakville
Site number	
Date	11/18/2024
Version	
Status	
Identifier	
Client	
Jobnumber	
Analyst	GHDNET\hcheng4
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	V/C Ratio Threshold	Average Delay threshold (s)	Queue threshold (PCE)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts	Max number of iterations for roundabouts
5.75	✓					0.85	36.00	20.00		✓	500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAEX24	2024 Existing	AM	ONE HOUR	08:00	09:30	15	✓
DPEX24	2024 Existing	PM	ONE HOUR	17:00	18:30	15	✓
DAFB31	2031 Background	AM	ONE HOUR	08:00	09:30	15	✓
DAFT31	2031 Total	AM	ONE HOUR	08:00	09:30	15	✓
DPFB31	2031 Background	PM	ONE HOUR	17:00	18:30	15	✓
DPFT31	2031 Total	PM	ONE HOUR	17:00	18:30	15	✓
DAFB36	2036 Background	AM	ONE HOUR	08:00	09:30	15	✓
DAFT36	2036 Total	AM	ONE HOUR	08:00	09:30	15	✓
DPFB36	2036 Background	PM	ONE HOUR	17:00	18:30	15	✓
DPFT36	2036 Total	PM	ONE HOUR	17:00	18:30	15	✓

Y-Intercept 100% - 2024 Existing, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	2.94	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.94	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAEX24	2024 Existing	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	555	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	595	100.000
C - Ninth Line North		ONE HOUR	✓	673	100.000
D - William Halton Parkway		ONE HOUR	✓	1003	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	113	347	95
	B - Burnhamthorpe Road West	64	0	105	426
	C - Ninth Line North	538	63	0	72
	D - William Halton Parkway	309	582	112	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.29	2.38	0.4	1.2	A	509	764
B - Burnhamthorpe Road West	0.28	2.12	0.4	1.5	A	546	819
C - Ninth Line North	0.37	2.82	0.6	2.7	A	618	926
D - William Halton Parkway	0.54	3.84	1.2	1.4	A	920	1381

Y-Intercept 100% - 2024 Existing, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	3.77	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	3.77	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPEX24	2024 Existing	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1333	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	987	100.000
C - Ninth Line North		ONE HOUR	✓	463	100.000
D - William Halton Parkway		ONE HOUR	✓	729	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	283	643	407
	B - Burnhamthorpe Road West	58	0	97	832
	C - Ninth Line North	321	53	0	89
	D - William Halton Parkway	198	460	71	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.63	4.12	1.7	2.8	A	1223	1835
B - Burnhamthorpe Road West	0.56	4.23	1.3	1.4	A	906	1359
C - Ninth Line North	0.34	3.64	0.5	2.2	A	425	637
D - William Halton Parkway	0.37	2.60	0.6	2.7	A	669	1003

Y-Intercept 100% - 2031 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	4.36	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	4.36	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB31	2031 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	690	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	759	100.000
C - Ninth Line North		ONE HOUR	✓	837	100.000
D - William Halton Parkway		ONE HOUR	✓	1278	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	130	399	161
	B - Burnhamthorpe Road West	74	0	121	564
	C - Ninth Line North	618	72	0	147
	D - William Halton Parkway	380	755	143	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.39	3.05	0.6	2.9	A	633	950
B - Burnhamthorpe Road West	0.38	2.60	0.6	2.8	A	696	1045
C - Ninth Line North	0.50	3.91	1.0	1.5	A	768	1152
D - William Halton Parkway	0.72	6.45	2.5	4.6	A	1173	1759

Y-Intercept 100% - 2031 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	7.10	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	7.10	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT31	2031 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	694	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	800	100.000
C - Ninth Line North		ONE HOUR	✓	881	100.000
D - William Halton Parkway		ONE HOUR	✓	1530	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	130	399	165
	B - Burnhamthorpe Road West	74	0	121	605
	C - Ninth Line North	618	72	0	191
	D - William Halton Parkway	392	872	266	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.44	3.67	0.8	3.0	A	637	955
B - Burnhamthorpe Road West	0.42	2.91	0.7	2.8	A	734	1101
C - Ninth Line North	0.54	4.31	1.2	1.5	A	808	1213
D - William Halton Parkway	0.86	12.58	5.7	28.6	B	1404	2106

Y-Intercept 100% - 2031 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	7.39	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	7.39	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB31	2031 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1568	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1184	100.000
C - Ninth Line North		ONE HOUR	✓	546	100.000
D - William Halton Parkway		ONE HOUR	✓	1077	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	325	739	504
	B - Burnhamthorpe Road West	67	0	111	1006
	C - Ninth Line North	369	61	0	116
	D - William Halton Parkway	265	681	131	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.82	9.74	4.6	19.6	A	1439	2158
B - Burnhamthorpe Road West	0.76	8.58	3.0	8.7	A	1086	1630
C - Ninth Line North	0.47	5.31	0.9	3.4	A	501	752
D - William Halton Parkway	0.55	3.76	1.2	1.5	A	988	1482

Y-Intercept 100% - 2031 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	12.47	B

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	12.47	B

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT31	2031 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1580	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1303	100.000
C - Ninth Line North		ONE HOUR	✓	670	100.000
D - William Halton Parkway		ONE HOUR	✓	1256	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	325	739	516
	B - Burnhamthorpe Road West	67	0	111	1125
	C - Ninth Line North	369	61	0	240
	D - William Halton Parkway	273	764	219	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.89	16.72	7.7	39.2	C	1450	2175
B - Burnhamthorpe Road West	0.88	17.13	6.5	32.4	C	1196	1793
C - Ninth Line North	0.63	8.21	1.7	3.5	A	615	922
D - William Halton Parkway	0.64	4.71	1.8	3.0	A	1153	1729

Y-Intercept 100% - 2036 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	5.86	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	5.86	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB36	2036 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	755	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	829	100.000
C - Ninth Line North		ONE HOUR	✓	917	100.000
D - William Halton Parkway		ONE HOUR	✓	1397	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	143	440	172
	B - Burnhamthorpe Road West	81	0	133	615
	C - Ninth Line North	682	80	0	155
	D - William Halton Parkway	417	824	156	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.45	3.47	0.8	2.7	A	693	1039
B - Burnhamthorpe Road West	0.42	2.87	0.7	2.8	A	761	1141
C - Ninth Line North	0.56	4.63	1.3	1.4	A	841	1262
D - William Halton Parkway	0.81	9.81	4.1	16.9	A	1282	1923

Y-Intercept 100% - 2036 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	14.72	B

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	14.72	B

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT36	2036 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	759	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	870	100.000
C - Ninth Line North		ONE HOUR	✓	961	100.000
D - William Halton Parkway		ONE HOUR	✓	1649	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	143	440	176
	B - Burnhamthorpe Road West	81	0	133	656
	C - Ninth Line North	682	80	0	199
	D - William Halton Parkway	429	941	279	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.50	4.28	1.0	2.3	A	696	1045
B - Burnhamthorpe Road West	0.46	3.26	0.9	2.2	A	798	1197
C - Ninth Line North	0.60	5.20	1.5	1.9	A	882	1323
D - William Halton Parkway	0.95	31.45	14.9	78.6	D	1513	2270

Y-Intercept 100% - 2036 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	15.70	C

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	15.70	C

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB36	2036 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1726	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1302	100.000
C - Ninth Line North		ONE HOUR	✓	601	100.000
D - William Halton Parkway		ONE HOUR	✓	1164	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	359	815	552
	B - Burnhamthorpe Road West	74	0	123	1105
	C - Ninth Line North	407	67	0	127
	D - William Halton Parkway	289	736	139	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.93	23.87	11.8	65.4	C	1584	2376
B - Burnhamthorpe Road West	0.89	19.13	7.2	36.3	C	1195	1792
C - Ninth Line North	0.57	7.21	1.3	3.4	A	551	827
D - William Halton Parkway	0.61	4.38	1.5	2.3	A	1068	1602

Y-Intercept 100% - 2036 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	42.36	E

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	42.36	E

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		100.00
B - Burnhamthorpe Road West	Percentage		100.00
C - Ninth Line North	Percentage		100.00
D - William Halton Parkway	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2878
B - Burnhamthorpe Road West	0.767	2910
C - Ninth Line North	0.715	2545
D - William Halton Parkway	0.705	2600

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT36	2036 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1738	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1421	100.000
C - Ninth Line North		ONE HOUR	✓	725	100.000
D - William Halton Parkway		ONE HOUR	✓	1343	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	359	815	564
	B - Burnhamthorpe Road West	74	0	123	1224
	C - Ninth Line North	407	67	0	251
	D - William Halton Parkway	297	819	227	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	1.01	66.95	37.0	116.6	F	1595	2392
B - Burnhamthorpe Road West	1.01	63.02	28.2	98.9	F	1304	1956
C - Ninth Line North	0.73	12.21	2.6	8.4	B	665	998
D - William Halton Parkway	0.70	5.71	2.3	4.5	A	1232	1849

Y-Intercept 85% - 2024 Existing, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	4.48	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	4.48	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAEX24	2024 Existing	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	555	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	595	100.000
C - Ninth Line North		ONE HOUR	✓	673	100.000
D - William Halton Parkway		ONE HOUR	✓	1003	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	113	347	95
	B - Burnhamthorpe Road West	64	0	105	426
	C - Ninth Line North	538	63	0	72
	D - William Halton Parkway	309	582	112	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.36	3.27	0.6	2.6	A	509	764
B - Burnhamthorpe Road West	0.34	2.83	0.5	2.3	A	546	819
C - Ninth Line North	0.45	3.98	0.8	2.4	A	618	926
D - William Halton Parkway	0.67	6.50	2.0	3.0	A	920	1381

Y-Intercept 85% - 2024 Existing, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	6.97	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	6.97	A

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPEX24	2024 Existing	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1333	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	987	100.000
C - Ninth Line North		ONE HOUR	✓	463	100.000
D - William Halton Parkway		ONE HOUR	✓	729	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	283	643	407
	B - Burnhamthorpe Road West	58	0	97	832
	C - Ninth Line North	321	53	0	89
	D - William Halton Parkway	198	460	71	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.77	8.03	3.2	9.3	A	1223	1835
B - Burnhamthorpe Road West	0.72	8.63	2.6	6.1	A	906	1359
C - Ninth Line North	0.45	5.88	0.8	3.4	A	425	637
D - William Halton Parkway	0.44	3.57	0.8	2.3	A	669	1003

Y-Intercept 85% - 2031 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	10.31	B

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	10.31	B

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB31	2031 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	690	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	759	100.000
C - Ninth Line North		ONE HOUR	✓	837	100.000
D - William Halton Parkway		ONE HOUR	✓	1278	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	130	399	161
	B - Burnhamthorpe Road West	74	0	121	564
	C - Ninth Line North	618	72	0	147
	D - William Halton Parkway	380	755	143	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.50	4.67	1.0	2.2	A	633	950
B - Burnhamthorpe Road West	0.47	3.74	0.9	2.2	A	696	1045
C - Ninth Line North	0.63	6.56	1.7	2.0	A	768	1152
D - William Halton Parkway	0.89	19.90	7.4	37.3	C	1173	1759

Y-Intercept 85% - 2031 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	51.06	F

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	51.06	F

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT31	2031 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	694	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	800	100.000
C - Ninth Line North		ONE HOUR	✓	881	100.000
D - William Halton Parkway		ONE HOUR	✓	1530	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	130	399	165
	B - Burnhamthorpe Road West	74	0	121	605
	C - Ninth Line North	618	72	0	191
	D - William Halton Parkway	392	872	266	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.55	5.72	1.2	1.7	A	637	955
B - Burnhamthorpe Road West	0.52	4.36	1.1	1.5	A	734	1101
C - Ninth Line North	0.68	7.78	2.1	2.9	A	808	1213
D - William Halton Parkway	1.06	122.40	63.9	135.4	F	1404	2106

Y-Intercept 85% - 2031 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	49.04	E

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	49.04	E

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB31	2031 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1568	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1184	100.000
C - Ninth Line North		ONE HOUR	✓	546	100.000
D - William Halton Parkway		ONE HOUR	✓	1077	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	325	739	504
	B - Burnhamthorpe Road West	67	0	111	1006
	C - Ninth Line North	369	61	0	116
	D - William Halton Parkway	265	681	131	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	1.03	90.37	46.8	121.0	F	1439	2158
B - Burnhamthorpe Road West	0.98	51.56	18.2	79.7	F	1086	1630
C - Ninth Line North	0.65	10.87	1.8	5.0	B	501	752
D - William Halton Parkway	0.67	6.21	2.0	3.4	A	988	1482

Y-Intercept 85% - 2031 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	112.91	F

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	112.91	F

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT31	2031 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1580	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1303	100.000
C - Ninth Line North		ONE HOUR	✓	670	100.000
D - William Halton Parkway		ONE HOUR	✓	1256	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	325	739	516
	B - Burnhamthorpe Road West	67	0	111	1125
	C - Ninth Line North	369	61	0	240
	D - William Halton Parkway	273	764	219	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	1.14	213.79	116.4	186.4	F	1450	2175
B - Burnhamthorpe Road West	1.07	140.18	59.7	124.9	F	1196	1793
C - Ninth Line North	0.81	19.89	3.9	18.9	C	615	922
D - William Halton Parkway	0.78	9.21	3.5	12.2	A	1153	1729

Y-Intercept 85% - 2036 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	30.06	D

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	30.06	D

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB36	2036 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	755	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	829	100.000
C - Ninth Line North		ONE HOUR	✓	917	100.000
D - William Halton Parkway		ONE HOUR	✓	1397	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	143	440	172
	B - Burnhamthorpe Road West	81	0	133	615
	C - Ninth Line North	682	80	0	155
	D - William Halton Parkway	417	824	156	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.56	5.56	1.3	1.5	A	693	1039
B - Burnhamthorpe Road West	0.52	4.33	1.1	1.5	A	761	1141
C - Ninth Line North	0.71	8.87	2.4	5.9	A	841	1262
D - William Halton Parkway	1.01	73.29	32.3	102.8	F	1282	1923

Y-Intercept 85% - 2036 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	121.46	F

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	121.46	F

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT36	2036 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	759	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	870	100.000
C - Ninth Line North		ONE HOUR	✓	961	100.000
D - William Halton Parkway		ONE HOUR	✓	1649	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	143	440	176
	B - Burnhamthorpe Road West	81	0	133	656
	C - Ninth Line North	682	80	0	199
	D - William Halton Parkway	429	941	279	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	1	5	9
	B - Burnhamthorpe Road West	3	0	1	4
	C - Ninth Line North	2	3	0	4
	D - William Halton Parkway	2	1	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	0.59	6.13	1.4	1.7	A	696	1045
B - Burnhamthorpe Road West	0.57	5.03	1.3	1.5	A	798	1197
C - Ninth Line North	0.77	11.23	3.2	12.9	B	882	1323
D - William Halton Parkway	1.19	303.86	156.1	200.0	F	1513	2270

Y-Intercept 85% - 2036 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	132.91	F

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	132.91	F

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB36	2036 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1726	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1302	100.000
C - Ninth Line North		ONE HOUR	✓	601	100.000
D - William Halton Parkway		ONE HOUR	✓	1164	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	359	815	552
	B - Burnhamthorpe Road West	74	0	123	1105
	C - Ninth Line North	407	67	0	127
	D - William Halton Parkway	289	736	139	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	1.18	267.84	153.8	200.0	F	1584	2376
B - Burnhamthorpe Road West	1.06	122.07	52.9	119.2	F	1195	1792
C - Ninth Line North	0.73	14.79	2.6	10.4	B	551	827
D - William Halton Parkway	0.74	8.03	2.8	6.8	A	1068	1602

Y-Intercept 85% - 2036 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Pedestrian Crossing	A - Ninth Line South - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	B - Burnhamthorpe Road West - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	C - Ninth Line North - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Pedestrian Crossing	D - William Halton Parkway - Pedestrian crossing	Pedestrian crossing uses default flow of 0. Is this correct?
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
1	William Halton Parkway / Burnhamthorpe Road / Ninth Line	Standard Roundabout		A, B, C, D	255.79	F

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	255.79	F

Legs

Legs

Leg	Name	Description	No yield line
A	Ninth Line South		
B	Burnhamthorpe Road West		
C	Ninth Line North		
D	William Halton Parkway		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
A - Ninth Line South	7.05	9.24	16.6	37.0	61.7	6.0		
B - Burnhamthorpe Road West	7.52	9.72	19.9	29.4	61.7	20.0		
C - Ninth Line North	6.33	8.37	13.1	43.2	61.7	11.0		
D - William Halton Parkway	7.10	8.79	20.3	34.9	61.7	31.0		

Unsignalled Pedestrian Crossing Crossings

Leg	Space between crossing and intersection entry (Unsignalled Pedestrian Crossing) (PCE)	Vehicles queueing on exit (Unsignalled Pedestrian Crossing) (PCE)	Central Refuge	Crossing data type	Crossing length (m)	Crossing time (s)
A - Ninth Line South	8.70	1.00		Distance	10.00	7.14
B - Burnhamthorpe Road West	10.10	1.00		Distance	9.24	6.60
C - Ninth Line North	9.24	1.00		Distance	9.94	7.10
D - William Halton Parkway	7.06	1.00		Distance	10.70	7.64

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
A - Ninth Line South	Percentage		85.00
B - Burnhamthorpe Road West	Percentage		85.00
C - Ninth Line North	Percentage		85.00
D - William Halton Parkway	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
A - Ninth Line South	0.776	2446
B - Burnhamthorpe Road West	0.767	2474
C - Ninth Line North	0.715	2164
D - William Halton Parkway	0.705	2210

The slope and intercept shown above include any corrections and adjustments.

Leg Capacity Adjustments

Leg	Type	Reason	Percentage capacity adjustment (%)
A - Ninth Line South	Percentage		100.00

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT36	2036 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - Ninth Line South		ONE HOUR	✓	1738	100.000
B - Burnhamthorpe Road West		ONE HOUR	✓	1421	100.000
C - Ninth Line North		ONE HOUR	✓	725	100.000
D - William Halton Parkway		ONE HOUR	✓	1343	100.000

Demand overview (Pedestrians)

Leg	Profile type	Average pedestrian flow (Ped/hr)
A - Ninth Line South	[ONEHOUR]	0.00
B - Burnhamthorpe Road West	[ONEHOUR]	0.00
C - Ninth Line North	[ONEHOUR]	0.00
D - William Halton Parkway	[ONEHOUR]	0.00

Origin-Destination Data

Demand (Veh/hr)

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	359	815	564
	B - Burnhamthorpe Road West	74	0	123	1224
	C - Ninth Line North	407	67	0	251
	D - William Halton Parkway	297	819	227	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		A - Ninth Line South	B - Burnhamthorpe Road West	C - Ninth Line North	D - William Halton Parkway
From	A - Ninth Line South	0	0	2	2
	B - Burnhamthorpe Road West	0	0	2	0
	C - Ninth Line North	1	2	0	2
	D - William Halton Parkway	9	1	1	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
A - Ninth Line South	1.31	496.92	235.8	235.8	F	1595	2392
B - Burnhamthorpe Road West	1.15	308.93	111.8	191.9	F	1304	1956
C - Ninth Line North	0.88	30.12	6.3	34.1	D	665	998
D - William Halton Parkway	0.85	13.72	5.4	27.1	B	1232	1849

Junctions 10
ARCADY 10 - Roundabout Module
Version: 10.1.1.1905 © Copyright TRL Software Limited, 2023
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Filename: Joshua Creek Dryland TIS - Internal Roundabout.j10

Path: N:\CA\Mississauga\Projects\Legacy\SernasTransTech\Projects\2024\Joshua Creek Dryland TIS\Analysis\Roundabout\Junction 10

Report generation date: 11/20/2024 2:45:09 PM

- »Y-Intercept 100% - 2031 Background, AM
- »Y-Intercept 100% - 2031 Total, AM
- »Y-Intercept 100% - 2031 Background, PM
- »Y-Intercept 100% - 2031 Total, PM
- »Y-Intercept 100% - 2036 Background, AM
- »Y-Intercept 100% - 2036 Total, AM
- »Y-Intercept 100% - 2036 Background, PM
- »Y-Intercept 100% - 2036 Total, PM
- »Y-Intercept 85% - 2031 Background, AM
- »Y-Intercept 85% - 2031 Total, AM
- »Y-Intercept 85% - 2031 Background, PM
- »Y-Intercept 85% - 2031 Total, PM
- »Y-Intercept 85% - 2036 Background, AM
- »Y-Intercept 85% - 2036 Total, AM
- »Y-Intercept 85% - 2036 Background, PM
- »Y-Intercept 85% - 2036 Total, PM

Summary of intersection performance

	AM								PM							
	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS	Set ID	Queue (Veh)	95% Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS

Y-Intercept 100% - 2031 Background																
J - Street J	A1 DAFB31	0.0	0.5	3.04	0.01	A	2.30	A	A1 DPFB31	0.0	0.5	2.96	0.00	A	2.16	A
K - Street K		0.0	-1	0.00	0.00	A				0.0	-1	0.00	0.00	A		
A - Street A		0.1	0.5	1.92	0.05	A				0.1	0.5	1.96	0.07	A		
B - Street B		0.1	0.5	2.50	0.10	A				0.1	0.5	2.42	0.06	A		
Y-Intercept 100% - 2031 Total																
J - Street J	A1 DAFT31	0.0	0.5	3.04	0.01	A	2.30	A	A1 DPFT31	0.0	0.5	2.96	0.00	A	2.16	A
K - Street K		0.0	-1	0.00	0.00	A				0.0	-1	0.00	0.00	A		
A - Street A		0.1	0.5	1.92	0.05	A				0.1	0.5	1.96	0.07	A		
B - Street B		0.1	0.5	2.50	0.10	A				0.1	0.5	2.42	0.06	A		
Y-Intercept 100% - 2036 Background																
J - Street J	A1 DAFB36	0.0	0.5	3.04	0.01	A	2.30	A	A1 DPFB36	0.0	0.5	2.96	0.00	A	2.16	A
K - Street K		0.0	-1	0.00	0.00	A				0.0	-1	0.00	0.00	A		
A - Street A		0.1	0.5	1.92	0.05	A				0.1	0.5	1.96	0.07	A		
B - Street B		0.1	0.5	2.50	0.10	A				0.1	0.5	2.42	0.06	A		
Y-Intercept 100% - 2036 Total																
J - Street J	A1 DAFT36	0.0	0.5	3.04	0.01	A	2.30	A	A1 DPFT36	0.0	0.5	2.96	0.00	A	2.16	A
K - Street K		0.0	-1	0.00	0.00	A				0.0	-1	0.00	0.00	A		
A - Street A		0.1	0.5	1.92	0.05	A				0.1	0.5	1.96	0.07	A		
B - Street B		0.1	0.5	2.50	0.10	A				0.1	0.5	2.42	0.06	A		
Y-Intercept 85% - 2031 Background																
J - Street J	A2 DAFB31	0.0	0.5	3.63	0.01	A	2.75	A	A2 DPFB31	0.0	0.5	3.51	0.01	A	2.58	A
K - Street K		0.0	-1	0.00	0.00	A				0.0	-1	0.00	0.00	A		
A - Street A		0.1	0.5	2.28	0.06	A				0.1	0.5	2.34	0.08	A		
B - Street B		0.1	0.5	3.00	0.11	A				0.1	0.5	2.88	0.07	A		
Y-Intercept 85% - 2031 Total																
J - Street J	A2 DAFT31	0.0	0.5	3.63	0.01	A	2.75	A	A2 DPFT31	0.0	0.5	3.51	0.01	A	2.58	A
K - Street K		0.0	-1	0.00	0.00	A				0.0	-1	0.00	0.00	A		
A - Street A		0.1	0.5	2.28	0.06	A				0.1	0.5	2.34	0.08	A		
B - Street B		0.1	0.5	3.00	0.11	A				0.1	0.5	2.88	0.07	A		
Y-Intercept 85% - 2036 Background																
J - Street J	A2 DAFB36	0.0	0.5	3.63	0.01	A	2.75	A	A2 DPFB36	0.0	0.5	3.51	0.01	A	2.58	A
K - Street K		0.0	-1	0.00	0.00	A				0.0	-1	0.00	0.00	A		
A - Street A		0.1	0.5	2.28	0.06	A				0.1	0.5	2.34	0.08	A		
B - Street B		0.1	0.5	3.00	0.11	A				0.1	0.5	2.88	0.07	A		
Y-Intercept 85% - 2036 Total																
J - Street J		0.0	0.5	3.63	0.01	A				0.0	0.5	3.51	0.01	A		

K - Street K	A2	0.0	-1	0.00	0.00	A	2.75	A	A2	0.0	-1	0.00	0.00	A	2.58	A
A - Street A	DAFT36	0.1	0.5	2.28	0.06	A			DPFT36	0.1	0.5	2.34	0.08	A		
B - Street B		0.1	0.5	3.00	0.11	A				0.1	0.5	2.88	0.07	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

File summary

File Description

Title	Joshua Creek Dryland TIS
Location	Oakville
Site number	
Date	11/18/2024
Version	
Status	
Identifier	
Client	
Jobnumber	
Analyst	GHDNET\hcheng4
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Show lane queues in feet / metres	Show all PICADY stream intercepts	Calculate residual capacity	V/C Ratio Threshold	Average Delay threshold (s)	Queue threshold (PCE)	Use simulation for HCM roundabouts	Use iterations for HCM roundabouts	Max number of iterations for roundabouts
5.75	✓					0.85	36.00	20.00		✓	500

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB31	2031 Background	AM	ONE HOUR	08:00	09:30	15	✓
DAFT31	2031 Total	AM	ONE HOUR	08:00	09:30	15	✓
DPFB31	2031 Background	PM	ONE HOUR	17:00	18:30	15	✓
DPFT31	2031 Total	PM	ONE HOUR	17:00	18:30	15	✓
DAFB36	2036 Background	AM	ONE HOUR	08:00	09:30	15	✓
DAFT36	2036 Total	AM	ONE HOUR	08:00	09:30	15	✓
DPFB36	2036 Background	PM	ONE HOUR	17:00	18:30	15	✓
DPFT36	2036 Total	PM	ONE HOUR	17:00	18:30	15	✓

Y-Intercept 100% - 2031 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.30	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.30	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB31	2031 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	5	2
	K - Street K	0	0	2	2
	A - Street A	2	1	0	85
	B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	0	0
	K - Street K	0	0	0	0
	A - Street A	0	0	0	0
	B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.04	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.05	1.92	0.1	0.5	A	81	121
B - Street B	0.10	2.50	0.1	0.5	A	126	189

Y-Intercept 100% - 2031 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.30	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.30	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT31	2031 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	5	2
K - Street K	0	0	2	2
A - Street A	2	1	0	85
B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.04	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.05	1.92	0.1	0.5	A	81	121
B - Street B	0.10	2.50	0.1	0.5	A	126	189

Y-Intercept 100% - 2031 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.16	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.16	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB31	2031 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	3	2
K - Street K	0	0	2	2
A - Street A	5	2	0	120
B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.00	2.96	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.07	1.96	0.1	0.5	A	117	175
B - Street B	0.06	2.42	0.1	0.5	A	80	120

Y-Intercept 100% - 2031 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.16	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.16	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT31	2031 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	3	2
K - Street K	0	0	2	2
A - Street A	5	2	0	120
B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.00	2.96	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.07	1.96	0.1	0.5	A	117	175
B - Street B	0.06	2.42	0.1	0.5	A	80	120

Y-Intercept 100% - 2036 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.30	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.30	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB36	2036 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	5	2
	K - Street K	0	0	2	2
	A - Street A	2	1	0	85
	B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	0	0
	K - Street K	0	0	0	0
	A - Street A	0	0	0	0
	B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.04	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.05	1.92	0.1	0.5	A	81	121
B - Street B	0.10	2.50	0.1	0.5	A	126	189

Y-Intercept 100% - 2036 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.30	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.30	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT36	2036 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	5	2
K - Street K	0	0	2	2
A - Street A	2	1	0	85
B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.04	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.05	1.92	0.1	0.5	A	81	121
B - Street B	0.10	2.50	0.1	0.5	A	126	189

Y-Intercept 100% - 2036 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.16	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.16	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB36	2036 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	3	2
	K - Street K	0	0	2	2
	A - Street A	5	2	0	120
	B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	0	0
	K - Street K	0	0	0	0
	A - Street A	0	0	0	0
	B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.00	2.96	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.07	1.96	0.1	0.5	A	117	175
B - Street B	0.06	2.42	0.1	0.5	A	80	120

Y-Intercept 100% - 2036 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
At	Y-Intercept 100%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.16	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.16	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		100.00
K - Street K	Percentage		100.00
A - Street A	Percentage		100.00
B - Street B	Percentage		100.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1280
K - Street K	0.538	1155
A - Street A	0.731	1976
B - Street B	0.638	1590

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT36	2036 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	3	2
K - Street K	0	0	2	2
A - Street A	5	2	0	120
B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.00	2.96	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.07	1.96	0.1	0.5	A	117	175
B - Street B	0.06	2.42	0.1	0.5	A	80	120

Y-Intercept 85% - 2031 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.75	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.75	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB31	2031 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	5	2
	K - Street K	0	0	2	2
	A - Street A	2	1	0	85
	B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	0	0
	K - Street K	0	0	0	0
	A - Street A	0	0	0	0
	B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.63	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.06	2.28	0.1	0.5	A	81	121
B - Street B	0.11	3.00	0.1	0.5	A	126	189

Y-Intercept 85% - 2031 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.75	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.75	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT31	2031 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	5	2
K - Street K	0	0	2	2
A - Street A	2	1	0	85
B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.63	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.06	2.28	0.1	0.5	A	81	121
B - Street B	0.11	3.00	0.1	0.5	A	126	189

Y-Intercept 85% - 2031 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.58	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.58	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB31	2031 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	3	2
	K - Street K	0	0	2	2
	A - Street A	5	2	0	120
	B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	0	0
	K - Street K	0	0	0	0
	A - Street A	0	0	0	0
	B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.51	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.08	2.34	0.1	0.5	A	117	175
B - Street B	0.07	2.88	0.1	0.5	A	80	120

Y-Intercept 85% - 2031 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.58	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.58	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT31	2031 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	3	2
K - Street K	0	0	2	2
A - Street A	5	2	0	120
B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.51	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.08	2.34	0.1	0.5	A	117	175
B - Street B	0.07	2.88	0.1	0.5	A	80	120

Y-Intercept 85% - 2036 Background, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.75	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.75	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFB36	2036 Background	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	5	2
	K - Street K	0	0	2	2
	A - Street A	2	1	0	85
	B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	0	0
	K - Street K	0	0	0	0
	A - Street A	0	0	0	0
	B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.63	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.06	2.28	0.1	0.5	A	81	121
B - Street B	0.11	3.00	0.1	0.5	A	126	189

Y-Intercept 85% - 2036 Total, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.75	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.75	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DAFT36	2036 Total	AM	ONE HOUR	08:00	09:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	7	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	88	100.000
B - Street B		ONE HOUR	✓	137	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	5	2
K - Street K	0	0	2	2
A - Street A	2	1	0	85
B - Street B	1	1	135	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.63	0.0	0.5	A	6	10
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.06	2.28	0.1	0.5	A	81	121
B - Street B	0.11	3.00	0.1	0.5	A	126	189

Y-Intercept 85% - 2036 Background, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.58	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.58	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFB36	2036 Background	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	3	2
K - Street K	0	0	2	2
A - Street A	5	2	0	120
B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

From	To			
	J - Street J	K - Street K	A - Street A	B - Street B
J - Street J	0	0	0	0
K - Street K	0	0	0	0
A - Street A	0	0	0	0
B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.51	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.08	2.34	0.1	0.5	A	117	175
B - Street B	0.07	2.88	0.1	0.5	A	80	120

Y-Intercept 85% - 2036 Total, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		Truck% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If Truck% at the intersection is genuinely zero, please ignore this warning.
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	Y-Intercept 85%	✓	100.000	100.000

Intersection Network

Intersections

Intersection	Name	Intersection type	Use circulating lanes	Leg order	Intersection Delay (s)	Intersection LOS
2	Internal Roundabout	Standard Roundabout		J, K, A, B	2.58	A

Intersection Network

Driving side	Lighting	Network delay (s)	Network LOS
Right	Normal/unknown	2.58	A

Legs

Legs

Leg	Name	Description	No yield line
J	Street J		
K	Street K		
A	Street A		
B	Street B		

Roundabout Geometry

Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
J - Street J	3.33	5.15	3.2	20.3	18.0	12.3		
K - Street K	3.35	4.17	9.9	18.0	18.0	41.8		
A - Street A	6.34	6.34	0.0	20.8	18.0	22.2		
B - Street B	5.33	5.33	0.0	20.8	18.0	35.0		

Slope / Intercept / Capacity

Leg Intercept Adjustments

Leg	Type	Reason	Percentage intercept adjustment (%)
J - Street J	Percentage		85.00
K - Street K	Percentage		85.00
A - Street A	Percentage		85.00
B - Street B	Percentage		85.00

Roundabout Slope and Intercept used in model

Leg	Final slope	Final intercept (PCE/hr)
J - Street J	0.598	1088
K - Street K	0.538	982
A - Street A	0.731	1680
B - Street B	0.638	1351

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
DPFT36	2036 Total	PM	ONE HOUR	17:00	18:30	15	✓

Demand overview (Traffic)

Leg	Linked leg	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
J - Street J		ONE HOUR	✓	5	100.000
K - Street K		ONE HOUR	✓	4	100.000
A - Street A		ONE HOUR	✓	127	100.000
B - Street B		ONE HOUR	✓	87	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	3	2
	K - Street K	0	0	2	2
	A - Street A	5	2	0	120
	B - Street B	2	2	83	0

Vehicle Mix

Truck data entry mode	PCE Factor for a Truck (PCE)
Truck Percentages	2.00

Heavy Vehicle %

		To			
		J - Street J	K - Street K	A - Street A	B - Street B
From	J - Street J	0	0	0	0
	K - Street K	0	0	0	0
	A - Street A	0	0	0	0
	B - Street B	0	0	0	0

Results

Results Summary for whole modelled period

Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)
J - Street J	0.01	3.51	0.0	0.5	A	5	7
K - Street K	0.00	0.00	0.0	-1	A	0	0
A - Street A	0.08	2.34	0.1	0.5	A	117	175
B - Street B	0.07	2.88	0.1	0.5	A	80	120

Appendix F

Signal Warrants

Input Data Sheet

Project No. & Description:

Intersecting roadways: Analysis Period:

Date of Signal Warrant Analysis: Analyst:

Direction of the Main Road / Street: Number of Hourly Volumes Available:

Justifications 7: Projected Volume Warrants

AM & PM Peak Hour Volumes Available

Both Roads Exist, Development is Future

- A Number of lanes on the Main Road?
- B Number of lanes on the Minor Road?
- C How many approaches?
- D What is the operating environment? Population < 10,000 AND Speed >= 70 km/hr
- E Is this an existing intersection? 120% Warrant without Combination
- F What is the eight hour vehicle volume at the intersection? (Please fill in table below)

Hour Ending	Main Eastbound Approach			Minor Northbound Approach			Main Westbound Approach			Minor Southbound Approach			Pedestrians Crossing Main Road
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
8:45	0	1,031	2	1	0	347	171	579	0	0	0	0	0
17:00	0	652	3	0	0	398	274	1,401	0	0	0	0	0
AHV*	0	421	1	0	0	186	111	495	0	0	0	0	0
Total 8 Hour Volumes**	0	4,209	11	1	0	1,861	1,111	4,950	0	0	0	0	0

*For Justification 7: Average Hourly Volumes = AHV = (AM Peak + PM Peak)/4

**For Justification 7: Total 8 Hour Volumes = AM Peak + PM Peak + 6 (AHV)

SIGNAL WARRANTS BASED ON MTO OTM BOOK 12 (2012) METHODOLOGIES

Analysis Sheet

Joshua Creek North

Intersection: William Halton Parkway and Burnhamthorpe Road East Analysis Period: Future Background 2031

Signal Warrant Analysis Date: November 21, 2024

Analyst: GHD

Both Intersection Roads Exists

Justification 7-1: Minimum Vehicle Volumes

Free Flow Rural Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent		
	1 Lanes		2 or More Lanes		Hour Ending											
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	AM	PM	AHV	AHV	AHV	AHV	AHV	AHV				
1A	✗	✗	✓	✗	480	720	600	900	2,131	2,728	1,214	1,214	1,214	1,214	1,214	
	COMPLIANCE %				120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	960.0%	120.0%	
1B	120	170	120	170	348	398	186	186	186	186	186	186				
	COMPLIANCE %				120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	960.0%	120.0%	
Free Flow Signal Justification 1:					Both 1A and 1B 120% Fulfilled each of 8 hours								Yes	✓	No	✗

Justification 7-2: Delay to Cross Traffic

Free Flow Rural Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent		
	1 lanes		2 or More lanes		Hour Ending											
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	AM	PM	AHV	AHV	AHV	AHV	AHV	AHV				
2A	✗	✗	✓	✗	480	720	600	900	1,783	2,330	1,028	1,028	1,028	1,028	1,028	
	COMPLIANCE %				120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	120.0%	960.0%	120.0%	
2B	50	75	50	75	87	137	0	0	0	0	0	0				
	COMPLIANCE %				120.0%	120.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	240.0%	30.0%	
Free Flow Signal Justification 2:					Both 2A and 2B 120% Fulfilled each of 8 hours								Yes	✗	No	✓

SIGNAL WARRANTS BASED ON MTO OTM BOOK 12 (2012) METHODOLOGIES

Results Sheet

Joshua Creek North

Intersection: William Halton Parkway and Burnhamthorpe Road East

Analysis Period: Future Background 2031

Signal Warrant Analysis Date: November 21, 2024

Analyst: GHD

Both Intersecting Roads Exists

Summary Results

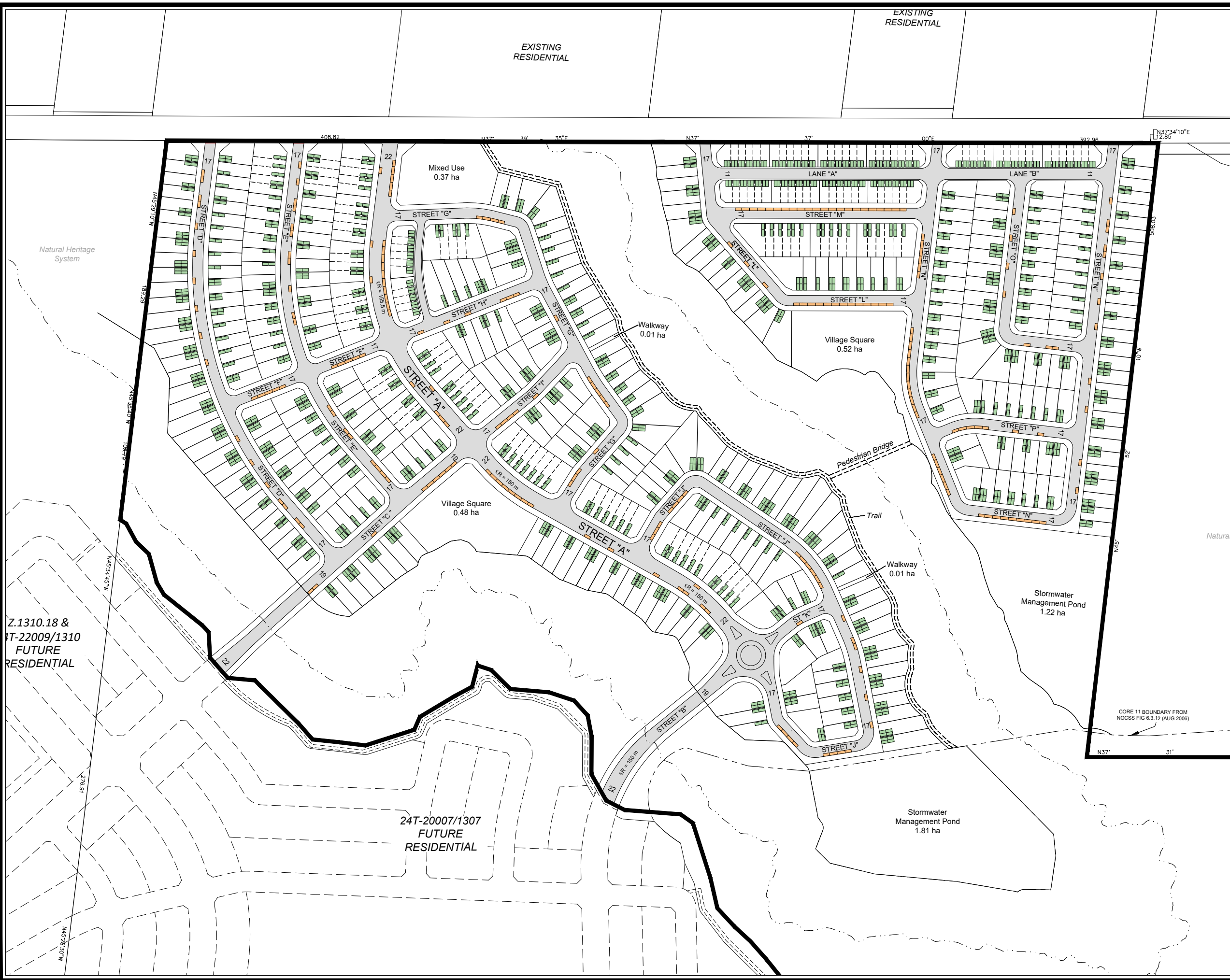
	Justification	Compliance	Signal Justified?	
			YES	NO
7-1. Minimum Vehicular Volume	A Total Volume	120.0%	✓	✗
	B Crossing Volume	120.0%		
7-2. Delay to Cross Traffic	A Main Road	120.0%	✗	✓
	B Crossing Road	30.0%		

SIGNAL WARRANTS BASED ON MTO OTM BOOK 12 (2012) METHODOLOGIES

Appendix G

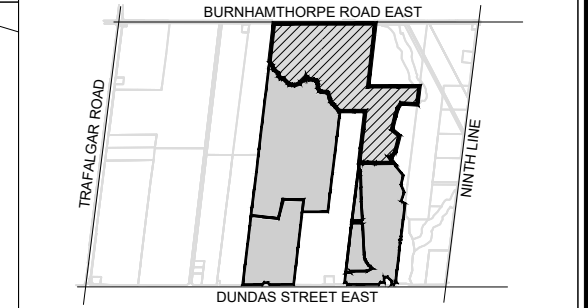
Parking Plan

S:\Korsiak & Company\MATTAMY\North Oakville\Joshua Creek Dryland\Joshua Creek Dryland - Parking Plan V2 - Nov-21-24 - w.s.dwg



PRELIMINARY ON-STREET PARKING ANALYSIS

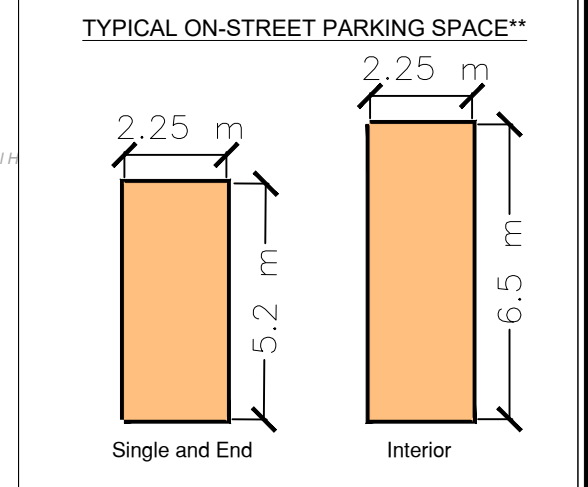
Mattamy (Joshua Creek) Limited DRYLAND
 PART OF LOTS 8&9
 CONCESSION 1, NORTH OF DUNDAS STREET
 GEOGRAPHIC TOWNSHIP OF TRAFALGAR
 NOW IN THE
TOWN OF OAKVILLE
 REGIONAL MUNICIPALITY OF HALTON



KEY MAP
 N.T.S.

Subject Lands
 Additional Lands Owned by Applicant

- ± 244 On-street parking spaces*
- ± 556 Residential units
- ± 0.44 Visitor parking space/ unit
- ± 1524 Residential parking spaces



* Subject to adjustment during detailed engineering design
 ** Per North Oakville Parking Strategy

Z.1310.18 &
 T-22009/1310
 FUTURE
 RESIDENTIAL

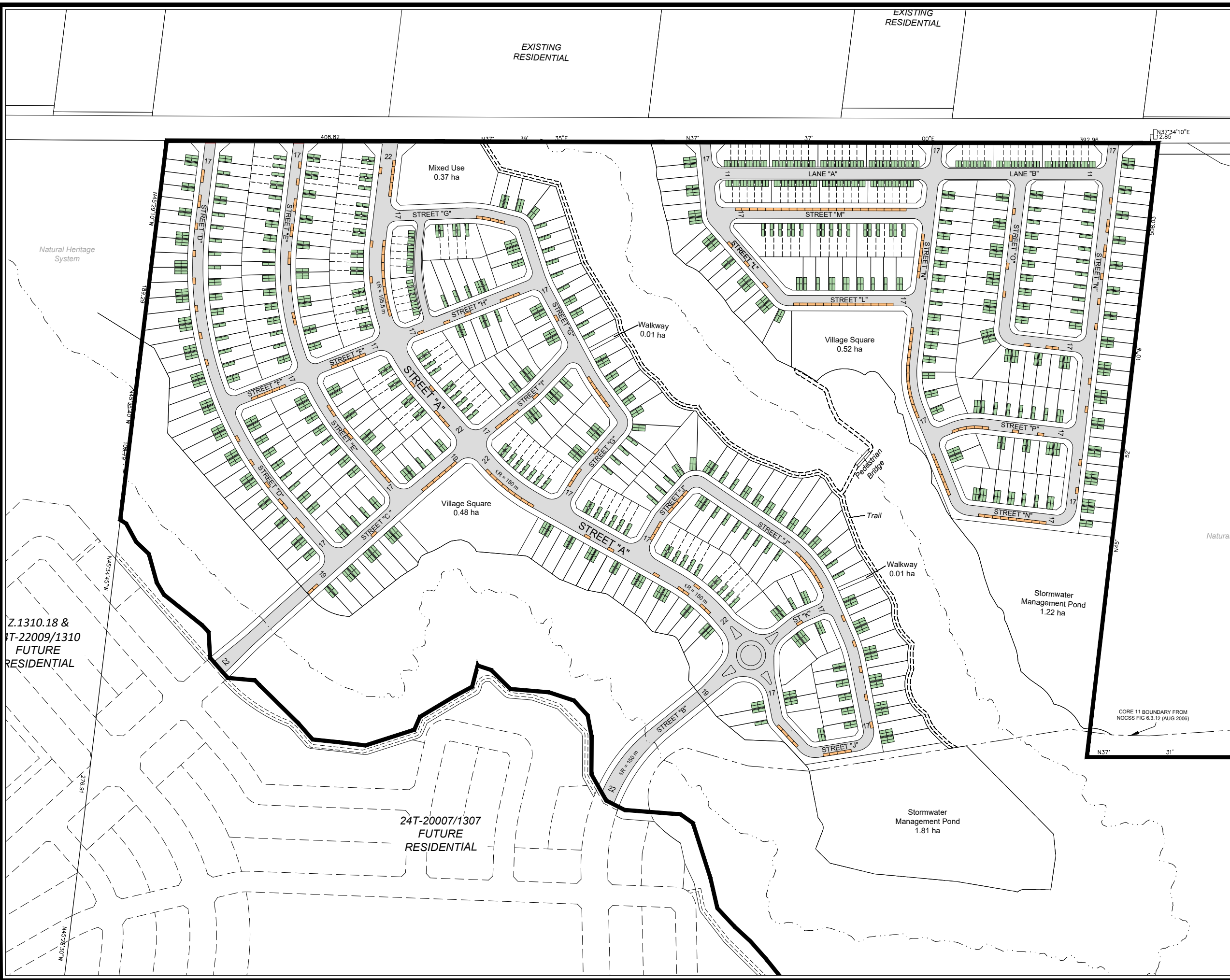
24T-20007/1307
 FUTURE
 RESIDENTIAL



SCALE 1:3500
 November 21, 2024



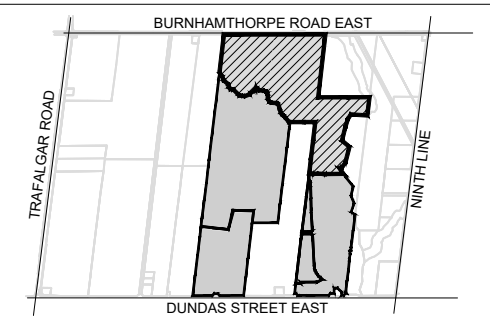
S:\Korsiak & Company\MATTAMY\North Oakville\Joshua Creek Dryland\Parking Plan V2 - Nov-29-24 - w.s.dwg



PRELIMINARY ON-STREET PARKING ANALYSIS

Mattamy (Joshua Creek North) Limited

PART OF LOTS 8&9
 CONCESSION 1, NORTH OF DUNDAS STREET
 GEOGRAPHIC TOWNSHIP OF TRAFALGAR
 NOW IN THE
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 REGIONAL MUNICIPALITY OF HALTON

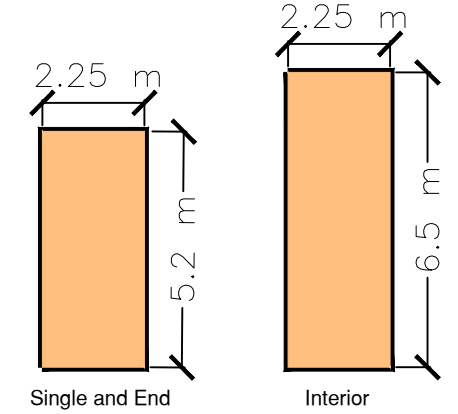


KEY MAP
 N.T.S.

Subject Lands
 Additional Lands Owned by Applicant

- ± 244 On-street parking spaces*
- ± 556 Residential units
- ± 0.44 Visitor parking space/ unit
- ± 1524 Residential parking spaces

TYPICAL ON-STREET PARKING SPACE**



* Subject to adjustment during detailed engineering design
 ** Per North Oakville Parking Strategy



SCALE 1:3500
 November 29, 2024

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