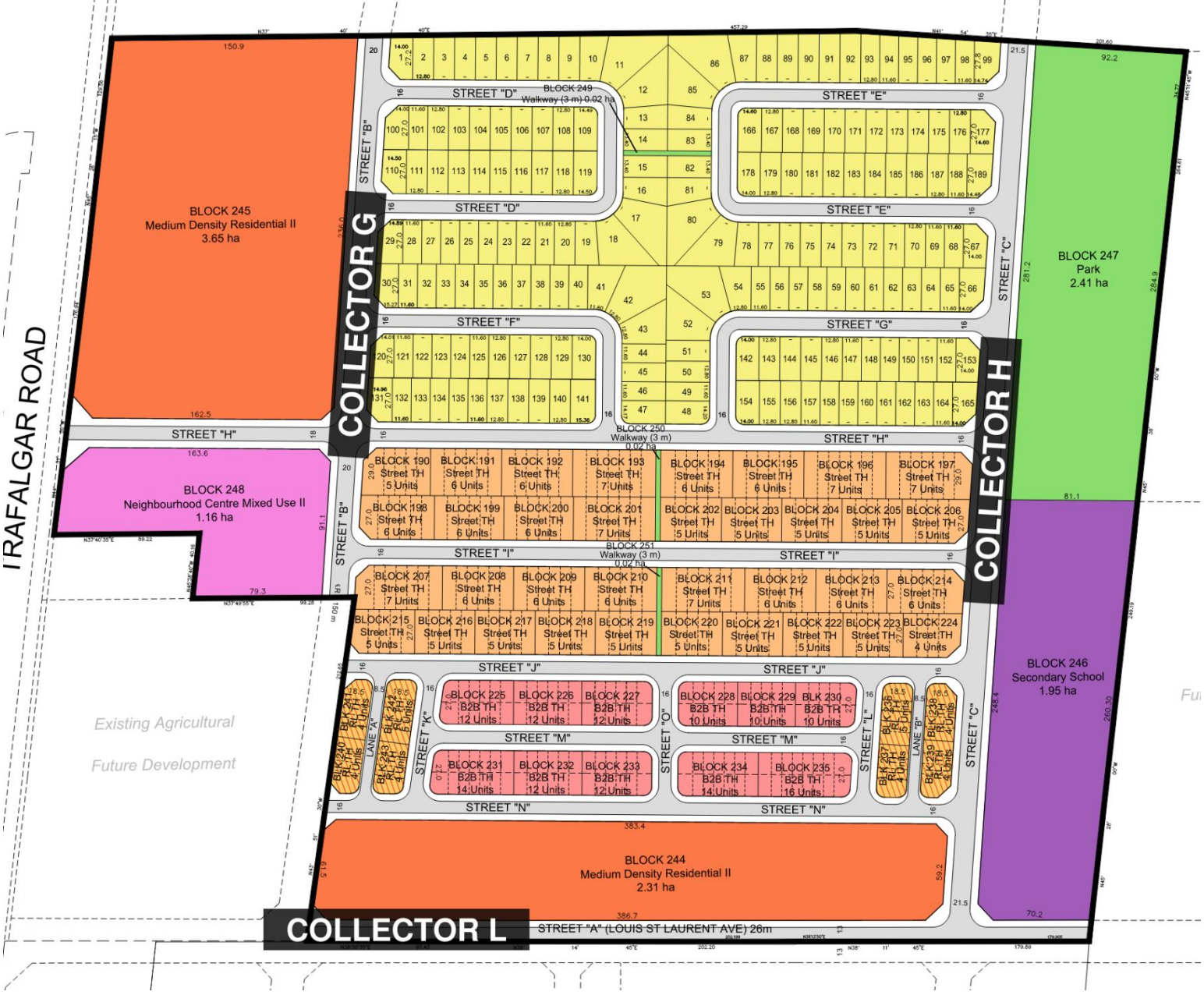

Traffic Impact Study

Hannover Draft Plan of Subdivision, 6583 Trafalgar Road - Milton

November 2025 | Project # 10495

York Trafalgar Homes

YORK TRAFALGAR

TYLin

EXECUTIVE SUMMARY

Introduction

- T.Y. Lin International Canada Inc. (TYLin) was retained by Milton Phase 4 Trafalgar Landowners Group Inc. to prepare a Tertiary Plan Road Network Assessment (RNA) for all lands within the Trafalgar Secondary Plan area. Envisioned as a complete community, the Trafalgar Secondary Plan is focused on delivering connected neighborhoods, parks and open space and a mix of uses and built form with densities that support future higher order transit.
- In order to realize the vision, the Secondary Plan requires a more detailed Tertiary Plan, the last layer between the policies and implementation by the draft plans of subdivision. The preparation of this Tertiary Plan has been guided by the objectives and detailed policies of the Secondary Plan.
- The RNA, required by the Town of Milton and Halton Region, was prepared in tandem with, and in support of, the overall Tertiary Plan for the Trafalgar lands within Milton's Phase 4 Lands. The Phase 4 Lands are defined in the Town's 2018 TMP as the next Urban Expansion Area for the year 2021 and beyond.
- Subsequently, TYLin was retained by Hannover Trafalgar Farms Limited & Milton Sheeva Land Limited; O/A Hornby Land JV (York Trafalgar Homes), to prepare a Traffic Impact Study in support of a Draft Plan of Subdivision Application for the 6583 Trafalgar Road residential subdivision (Hannover lands), located within the Milton Phase 4 Trafalgar Corridor Secondary Plan (MP4TC) in the Town of Milton.
- The base of the traffic forecast utilized within this study is sourced within the RNA study for the MP4TC lands, with changes to the densities considered for various land parcels as applicable.
- The study intersections have been detailed below:
    - Trafalgar Road and Derry Road
    - Trafalgar Road and Britannia Road
    - Trafalgar Road and Street 'H'
    - Trafalgar Road and Street 'A' (Louis St Laurent Avenue / Collector L)
    - Street 'A' (Louis St Laurent Avenue / Collector L) and Street 'B' (Collector G)
    - Street 'A' (Louis St Laurent Avenue / Collector L) and Street 'C' (Collector H)
    - Street 'H' and Street 'B' (Collector G)
    - Street 'H' and Street 'C' (Collector H)
- As per the subdivision draft plan dated May 21, 2025, the development statistics for the

Hannover lands consist of the following:

- Single Detached Dwellings – 189 Units
- Street Townhouse – 199 Units
- Back-to-Back Townhouse – 254 Units
- Real Lane Townhouses – 34 Units
- Medium Density Residential Dwellings – 1,237 Units
- Neighborhood Centre Mixed Use Dwellings – 330 Units
- 1 Secondary School
- Neighbourhood Park

- TYLin completed a review of the proposed subdivision draft plan design for the Hannover lands based on the requirements on Right of Way (ROW), road bends, intersection spacing, intersection angle and daylight triangle / rounding. It is considered that the design of the roadways is deemed acceptable.
- TYLin's 2023 TMC data, sourced from the RNA study, was collected after the 2022 Highway 401 widening from Mississauga to Milton. To reflect regional traffic growth and align with recent infrastructure improvements, including the Britannia Road widening, an annual growth rate of 2.65% was applied to traffic volumes on regional roadways. This adjusted dataset forms the 2025 baseline traffic volume analysis for this study.
- The horizon years of 2031 (build-out year of the Hannover Lands) and 2041 (ten-year horizon) were adopted to assess the future traffic conditions. The study horizons align with the horizons assessed in the ongoing Trafalgar Tertiary Plan RNA study. The future traffic volume in the 2031 horizon will include the Hannover Lands trips plus the balance of MP4 Phase 1 lands, while the 2041 horizon will further incorporate the balance of MP4 Phase 2 lands.
- Two (2) out of a total of thirty-eight (38) Traffic Analysis Zones (TAZ) within the Hannover lands are identified as the proposed subdivision for trip generation purposes. The resulting trips were then assigned to the collector road and broader transportation network based on each TAZ's location within the Tertiary Plan.
- A total of 666 net auto trips, consisting of 158 inbound and 508 outbound trips, are estimated to be generated by the Hannover Lands during the weekday AM peak hour. During the weekday PM peak hour, 456 inbound and 281 outbound net auto site trips are estimated, totaling 737 trips.
- The updated Hannover Lands (TAZs 8 and 9) trip generation would result in a net difference of +147 and +97 two-way trips in the AM and PM when compared to MP4 RNA Study.
- Based on the recommendations outlined in the Milton Transportation Master Plan (TMP) and

the proposed lane configuration modifications detailed in the RNA for the MP4TC area, phased improvements have been adopted for the study intersections.

2031 Future Lane Configuration Modification and Responsibility

Intersection	Approach	Modification	Responsibility
Existing Intersections			
Trafalgar Road & Derry Road	Northbound	▶ Dual left turn lane ▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	Region
	Eastbound and Southbound	▶ Dual left turn lane ▶ 1 additional through lane (HOV)	
	Westbound	▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	
Trafalgar Road & Britannia Road	Eastbound and Westbound	▶ Dual left turn lane	
	Northbound and Southbound	▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	
Arterial-to-Collector Intersections			
Trafalgar Road & Collector L	Northbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary right turn lane	MP4 Developers
	Southbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary left turn lane	MP4 Developers
	Westbound	▶ Auxiliary left turn lane ▶ Auxiliary right turn lane	MP4 Developers
Arterial-to-Local Road Intersections			
Trafalgar Road & Street H	Northbound	▶ 1 additional through lane (HOV)	Region
		▶ Shared right turn movement	MP4 Developers
	Southbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary left turn lane	MP4 Developers
	Westbound	▶ Auxiliary left turn lane ▶ Auxiliary right turn lane	MP4 Developers
Collector-to-Collector Intersections			
Collector G & Collector L	Northbound and Southbound	▶ Single lane approach (shared all movements)	MP4 Developers

Intersection	Approach	Modification	Responsibility
	Eastbound and Westbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	
Collector H & Collector L	Northbound and Southbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	
	Eastbound and Westbound	▶ Single lane approach (shared all movements)	
Collector-to-Local Road Intersections			
Collector G & Street H	All Direction	▶ Single lane approach (shared all movements)	MP4 Developers
Collector H & Street H	Northbound	▶ 1 shared through/left turn lane	
	Eastbound	▶ 1 shared left/right turn lane	
	Southbound	▶ 1 shared through/right turn lane	

2041 Future Lane Configuration Modification and Responsibility

Intersection	Approach	Modification	Responsibility
Existing Intersections			
Trafalgar Road & Derry Road	Westbound	▶ Dual left turn lanes	Region
Trafalgar Road & Britannia Road	Northbound and Southbound	▶ Dual left-turn lanes	
Arterial-to-Collector Intersections			
Trafalgar Road & Collector L	Northbound	▶ Auxiliary left turn lane	Town
	Eastbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	MP4 Developers
	Southbound	▶ Auxiliary right turn lane	
	Westbound	▶ Shared through movement	

Baseline Traffic Conditions

- All study intersections are generally operating well overall, with acceptable delays and capacity during both the weekday AM and PM peak hours.

2031 Future Background Traffic Conditions

- The intersection of Trafalgar Road and Derry Road is projected to operate within capacity. Several movements experience high delays (LOS F), though all v/c ratios remain below 1.0.

- At Trafalgar Road and Britannia Road, the intersection is projected to operate with reserve capacity.

2031 Future Total Traffic Conditions

- All existing, arterial-to-collector and collector-to-collector, and local-to-arterial/collector intersections are projected to operate within reserve capacity during both AM and PM peak hours, except for the intersection of Trafalgar Road and Britannia Road.
- For Trafalgar Road at Britannia Road, consistent with 2031 future background conditions, the intersection is projected to operate with overall reserve capacity. However, critical movements approach theoretical capacity (v/c between 0.85 and 1.00).
- This performance is typical for major arterial intersections during peak hours, where operations approach theoretical capacity. Outside peak periods, traffic flow at this intersection is expected to return to manageable levels.

2041 Future Background Traffic Conditions

- The intersection of Trafalgar Road at Derry Road is anticipated to operate with overall reserve capacity during both peak hours. However, some movement is expected to exceed critical thresholds (v/c between 0.85 and 1.00).
- The intersection of Trafalgar Road at Britannia Road is projected to operate with limited reserve capacity during the PM peak hour. Some movements are identified approaching critical capacity (v/c between 0.85 and 1.00)

2041 Future Total Traffic Conditions

- The existing arterial intersections are anticipated to operate at or near critical capacity, while the arterial-to-collector, collector-to-collector, and local-to-arterial/collector intersections are projected to operate within overall reserve capacity during both AM and PM peak hours. Some individual movements are expected to experience LOS 'E' or 'F' due to increased delays, though most movements remain within capacity (v/c < 1.00).
- For Trafalgar Road at Derry Road, similar to the 2041 future background scenario, the intersection is expected to operate with overall reserve capacity. However, some movements are approaching or exceeding theoretical capacity (v/c between 0.85 and 1.00).
- For Trafalgar Road at Britannia Road, the intersection is projected to operate above theoretical capacity during the PM peak hour.
- This performance is typical for the intersections of major arterial roads during peak hours, where high traffic demand leads to operations approaching or exceeding capacity. Outside of peak hours, traffic flow at this intersection is expected to return to more manageable levels.

- The proposed active transportation facilities within the site are designed to support internal connectivity for pedestrians and cyclists, while also linking to the broader active transportation network identified in the Trafalgar Tertiary Plan as below.

Proposed Active Transportation Facilities

Road Name	Active Transportation Facilities
Trafalgar Road	▶ multi-use paths (MUPs) on both sides
Collector L (26.0m ROW)	▶ in-boulevard bike lanes and sidewalks on both sides
Collector H (21.5m ROW)	▶ in-boulevard bike lanes and sidewalks on both sides
Collector G (20m ROW)	▶ a MUP on one side and a sidewalk on the other side
Local roads (18m ROW)	▶ sidewalks on both sides of the road
Local roads (16m ROW)	▶ a sidewalk on either side of the road

- The on-street parking plan is subject to refinement at the detailed design stage once residential driveways, and all utilities are confirmed.

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1 INTRODUCTION

1.1 Scope and Objective

T.Y. Lin International Canada Inc. (TYLin) was retained by Hannover Trafalgar Farms Limited & Milton Sheeva Land Limited; O/A Hornby Land JV (York Trafalgar Homes), to prepare a Traffic Impact Study (TIS) in support of a Draft Plan of Subdivision (DPS) Application for the 6583 Trafalgar Road subdivision (herein referred to as the Hannover lands), located within the Milton Phase 4 Trafalgar Corridor Secondary Plan (herein referred to as the MP4TC lands) in the Town of Milton.

This TIS study, along with the other traffic studies in support of the Draft Plan of Subdivision Applications for the other land parcels within the MP4TC, have been completed using the most up-to-date development statistics available for each land parcel at the time of study completion.

This study is prepared to assess the land use plan and associated density proposed by The York Trafalgar Homes and proceed with the application process for the site. The base of the traffic forecast utilized within this study is sourced within the Tertiary Plan Road Network Assessment (RNA) study for the MP4TC lands, with changes to the densities considered for various land parcels as applicable. All analysis has been detailed within this report, and includes the following review:

- Review traffic forecast completed as part of the RNA study and update development density for the applicable land parcels to account for the latest development statistics proposed by each individual landowner.
- Using the updated traffic forecast, derive the 2031 (build-out year of the Hannover Lands) and 2041 (ten-year horizon year) future background traffic volumes at the study intersections in order to assess projected traffic operations without the proposed site traffic in place and derive remedial measures as required.
- Remove and replace the estimated site traffic volumes assumed in the Trafalgar RNA as per updated subdivision statistics. As such, the estimated site generated traffic will be built upon the forecasted traffic volumes provided by the Trafalgar RNA study, which in turn will become our future traffic base model.
- Create a future conditions traffic operations model to assess the traffic impacts of the proposed development after introducing the estimated site generated traffic into the future background traffic model. Report any operational deficiencies and recommend mitigating measures, if necessary, to improve traffic operations, including recommending lane configuration changes, and/or traffic control alterations.
- Determine the future site-related impacts in the context of local transportation modes including reviews of transit, cycling and pedestrian facilities and circulation from the

proposed development to the external road network.

- Compare trip generation assumptions provided in the Trafalgar RNA and the currently proposed draft plan.
- Review the subdivision plan with a study area road inventory review to confirm lane assignments, traffic controls, speed limits, and surrounding land uses and general study area characteristics.

The objective of this study is to determine the traffic volumes anticipated to be generated by the proposed development during the critical weekday AM and PM peak periods; to assess the impact of this traffic on the existing and future roadway network, recommend improvements to accommodate the projected traffic if any are needed, and confirm that the internal road network is consistent with Town standards and provides safe operation of vehicles within the proposed subdivision.

A copy of the Terms of Reference communication to date between the Town, Region, and TYLin is provided in **Appendix A**.

1.2 Planning Context and Relevant Background Studies

The Trafalgar Tertiary Plan has been developed within the context of provincial, regional, and municipal planning policies and initiatives. Transportation plans and studies that apply to the Trafalgar Tertiary Plan area have been summarized for reference purposes.

1.2.1 Town of Milton Transportation Master Plan (2018)

The 2018 Milton TMP is a document which outlines the long-term vision for the future of the Town of Milton's transportation system. More specifically, the TMP refers to itself as a "guiding document" for a "more balanced, multi-modal future." As with most master plans, the document provides policy context for the approach to achieving the vision, which includes an outline of capital improvements and additional studies, as required. Input from staff and decision makers, stakeholders, and resident were used to inform the direction of the TMP.

A total of twelve objectives were outlined in the Town's TMP, and a selection of the objectives that are most applicable to the Trafalgar Tertiary Plan are as follows:

- Development of a long-term transportation vision and overall road network philosophy to support the Town's future population projections and employment growth to 2031 and beyond;
- Providing overall direction for the Town to expand its transportation network in an integrated, efficient, and effective manner with respect to safety, transit, active transportation, complete streets, and environmental considerations;

- Development of a road classification hierarchy that reflects the dynamic shift towards sustainable and alternate modes of transportation, and develop road cross sections to reflect any changes;
- Providing input to the preparation of the next Secondary Plan areas, including the Phase 4 Lands, and the required engineering input to develop the road network;
- Review and make recommendations on the Town's current road standards, design criteria, and policies (including roundabouts) to ensure they meet the needs of all modes of transportation, while promoting the development of safe, efficient, livable and traffic calmed street networks;
- Investigate the need and justification for additional Highway 400 series overpasses, railway grade separations as well as mid-block flyovers;
- Investigate current and future deficiencies in roadway connectivity; and
- Enhancing active transportation routes, facilities, and connections throughout the Town's urban and rural areas;
- Provide a framework by which decisions regarding the Town's transportation system can be informed;
- Develop a transportation policy framework for the next Official Plan. This framework will be developed in consultation with all interested parties;
- Meaningfully engage the public and interested stakeholders in a dialogue to help shape the outcomes of the T.M.P;
- Review major rights-of-ways to ensure responsibility is appropriately aligned with planned roadway function.

In the context of the MP4TC lands, the TMP provided an evaluation of conceptual road network alternatives, including considerations for land use, transit connectivity, active transportation opportunities, cost, and goods movement. A preferred set of road network alternatives for the MP4TC lands were identified, which has influenced the proposed road network presented herein.

1.2.2 Town of Milton Transportation Master Plan for the Trafalgar and Agerton Secondary Plan (2019-2022)

The TMP for the Trafalgar Agerton Secondary Plan was first completed in March of 2019, with an updated version circulated in December of 2020. Further drafts/addendums were circulated after this while the document was under review by Town and Regional Staff, with the most recent final traffic addendum circulated in March of 2022. The December 2020 TMP and the March 2022 Traffic Addendum were both reviewed as part of the preparation of the enclosed TIS.

The Trafalgar and Agerton TMP was prepared using Milton's 2018 TMP as a guiding document

and further developed the traffic planning already in place for the Trafalgar and Agerton Secondary Plan areas. The TMP assessed the high-level impacts of the proposed Trafalgar and Agerton Secondary Plans on the adjacent arterial roads, collector roads, and major intersections.

The March 2022 TMP Addendum concluded that should the projected future total volumes be actualized, a total of five study intersections are expected to experience capacity issues under future total conditions.

The 2022 TMP Addendum recommends that in addition to applying signal timing optimization to study intersections, dedicated turning lanes, including dual left-turn lanes, can also be implemented to help improve operations for turning movements. However, many intersections will continue to operate with over-capacity movements under future total conditions despite these improvements should the projected volume be actualized. Regarding the dedicated turn lane improvements, TMP recommends that the "rights-of-way requirement be protected now, and the intersections be monitored regularly through the Region's Traffic Count Program and be further considered in the future Municipal Class Environmental Assessment Studies."

1.2.3 Trafalgar Secondary Plan (2019, 2024)

The Trafalgar Secondary Plan was adopted by the Town of Milton on March 25, 2019 (By-law 030-2019), and has since been amended in accordance with Ontario Land Tribunal Orders issued on February 8, 2024 and July 22, 2024. The Tertiary Plan for the TSPA has been prepared in accordance with the goals and objectives of the Trafalgar Secondary Plan.

From a transportation perspective, the Secondary Plan document outlines several goals and objectives for the TSPA, resulting in the vision of a multi-modal, connected community, requiring a road network of complete streets that are accessible to all users. Three of the mobility goals listed in section C.11.3.2 of the Trafalgar Secondary Plan are:

- Foster a connected and accessible on- and off-road pedestrian and cycling path network which promotes a culture of active transportation;
- Provide the opportunity for a local transit network that can support higher-order transit service on Trafalgar Road;
- Realize a network of Complete Streets that balance the needs of all road users, including pedestrians, cyclists, transit users, and motorists.

The Trafalgar Tertiary Plan includes a robust collector road network that proposes modifications to the Town's standard right-of-way (ROW) collector road cross-sections. These proposed modifications often include active transportation elements, such as in-boulevard cycle tracks, buffered on-street cycle lanes, and Multi-use Paths (MUPs), that differ from the Town's ROW standards in order to better achieve the level of active transportation connectivity envisioned by the Secondary Plan.

In addition to ensuring active transportation infrastructure is available and accessible to all users, the proposed Trafalgar Tertiary Plan collector roads maintain general automobile travel lanes that are able to accommodate local transit vehicles (3.35m wide) while also providing on-street parking on at least one side of the road.

1.2.4 Planning Changes and Population Pledges

In accordance with the planning changes over the last few years, the 2022 Trafalgar TMP aims to target 30% of its new residential units to be designated as either affordable housing, assisted housing, stacked townhouses, back-to-back townhouses or apartments.

Since the completion of the 2022 Trafalgar TMP, the Trafalgar Tertiary Plan has increased its forecasted population and employment to align with the Region's Joint Best Planning Estimates. Population of 32,000 people has increased to 54,681 people. As for the employment population, the 2022 Trafalgar TMP forecasted 4,000 jobs while the Trafalgar Tertiary Plan forecasted 6,040 jobs. It should be noted that the employment jobs forecast in the Trafalgar Tertiary Plan includes work-from-home jobs estimates which accounts for 10% of the population translating to 1,493 jobs consisting of 1,140 commercial, 80 secondary school, 360 elementary school, and 4,500 work-from-home jobs.

1.2.5 Town of Milton Transportation Master Plan (2025)

The 2025 Milton TMP finalized on February, 2025 serves as an update to the previous 2018 Milton TMP that was discussed in **Section 1.2.1**. While the 2025 TMP maintains many of the objectives and goals identified in the 2018 TMP, there are some notable differences between the two plans such as active transportation infrastructure, right-of-way (ROW) widths, and road classifications.

In the 2025 TMP, the Town has recommended updated road classification and right-of-way widths to better accommodate the anticipated growth within Milton by incorporating active transportation infrastructure in urban areas. All ROWs except the laneway and rural roadway ROWs in the 2025 TMP were revised. One of the main differences is the revised ROWs in the 2025 TMP where on-street bicycle lanes were shifted to in-boulevard cycle tracks for all collector and arterial road cross-sections to provide that physical separation between cyclists and vehicles. This change also eliminates the multi-use paths that were previously identified in the 2018 TMP, by incorporating and separating both sidewalks and cycle tracks to be provided on both sides of the collector and arterial roads. In the previous 2018 TMP and Town standards, sidewalk widths were identified to be 1.5m for all local, collector, and arterial roads. In the 2025 TMP, sidewalk widths were increased from 1.5m to 1.8m for all roadway types.

1.2.6 Region of Halton Integrated Master Plan

The Region of Halton's Integrated Master Plan (IMP) is a long-term plan that aims to expand

water, wastewater, and transportation infrastructure to accommodate the growing population in the local municipalities within the Region to 2051 and beyond. The IMP states that it will:

- Guide the management and development of the Region's water, wastewater and transportation systems (including the active transportation network and master plan);
- Maximize capacity, system flexibility and extend the life expectancy of Regional water, wastewater and transportation infrastructure; and
- Outline the strategies for maintaining and improving these critical systems to ensure we meet the needs of the community now and in the future.

A selection of transportation strategies was also outlined in the IMP, in which are applicable to the Trafalgar Tertiary Plan, and are as follow:

- Optimizing existing/planned transportation network;
- Localized corridor widening and improvements;
- Flexibility and adaptability to support the evolution of Transit Priority Corridors;
- Prioritizing walking and cycling facilities, including at intersections;
- Identifying supporting strategies and technologies (for example, transit signal priority).

1.2.7 Trafalgar Tertiary Plan – Road Network Assessment

The Road Network Assessment (RNA) is under preparation in tandem with, and in support of, the overall tertiary plan for the Trafalgar lands within Milton's Phase 4 Lands (MP4TC).

The context of the RNA consists of the following:

- Review of applicable information from the Trafalgar & Agerton Secondary Plan;
- Review of existing transportation infrastructure and traffic operations within study area;
- Assessment of future background traffic operations for the planning horizons of 2031 and 2041 associated with background growth and developments surrounding the Trafalgar lands;
- Identification of traffic operations concerns and the potential mitigation measures or infrastructure improvements necessary to accommodate the impacts of background growth and site generated traffic for the planning horizons of 2031, 2041, and 2051;
- Assessment of Transit and Active Transportation Infrastructure; and
- Recommended public street network that incorporates more sustainable modes of transportation to reduce automobile dependency.

The base of the traffic forecast utilized within this study is sourced within the RNA study for the MP4TC lands, with changes to the densities considered for various land parcels as applicable.

2 SITE CHARACTERISTICS

2.1 Overall Study Area

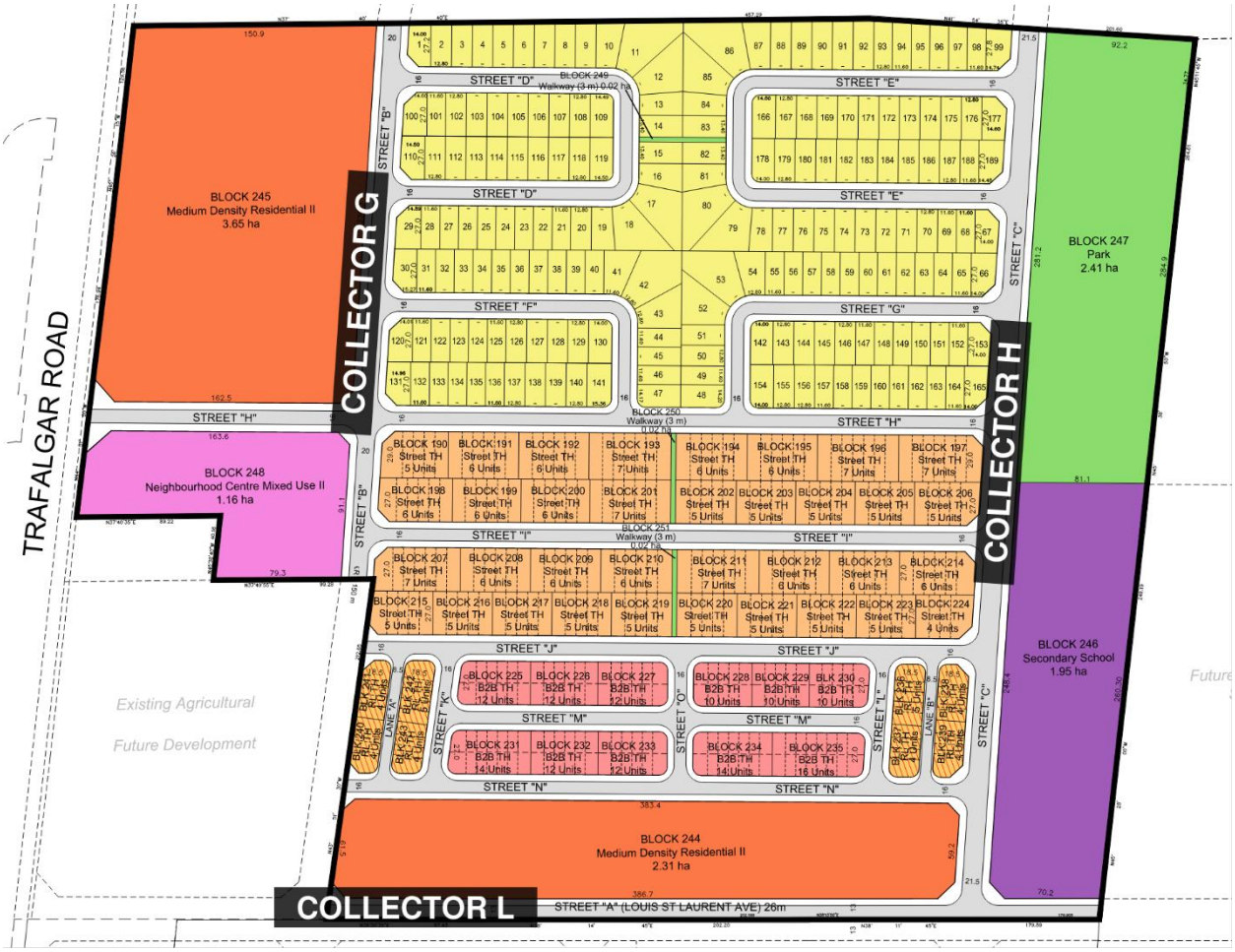
The Hannover lands are located at 6583 Trafalgar Road within the MP4TC study area, which is contained between Derry Road to the north, Lower Base Line to the south, Eighth Line to the east and Sixth Line to the West. The development bounds, highlighted in yellow, are shown within the white diagonal hatched MP4TC lands in **Figure 2-1**.

Figure 2-1 MP4TC Study Area

2.2 Subject Lands Area

The Hannover lands are located in the northern half of the MP4TC lands within the Town of Milton. The site is bound by Trafalgar Road to the west, surrounded by other future MP4 development lands in the south, east and west. An excerpt of proposed draft plan, dated May 21, 2025, has been included in **Figure 2-2** and detailed layout is attached in **Appendix B**.

Figure 2-2 Hannover Lands Draft Plan Excerpt



2.3 Study Intersections

For the purposes of this study, intersections were selected as the boundary road network intersections surrounding directly adjacent to the site along with the proposed access intersections to the external municipal roadway system. The study intersections have been detailed below (The proposed street names adopted in the draft plan correspond to the collector naming used in RNA study, as noted below):

- Trafalgar Road and Derry Road
- Trafalgar Road and Britannia Road
- Trafalgar Road and Street 'H'
- Trafalgar Road and Street 'A' (Louis St Laurent Avenue / Collector L)
- Street 'A' (Louis St Laurent Avenue / Collector L) and Street 'B' (Collector G)
- Street 'A' (Louis St Laurent Avenue / Collector L) and Street 'C' (Collector H)
- Street 'H' and Street 'B' (Collector G)
- Street 'H' and Street 'C' (Collector H)

The remainder of the study intersections that are encompassed by the MP4TC lands are to be assessed as part of the TIS reports completed in support of the surrounding development lands and would consider traffic generated by the Hannover lands as part of their review. As such the impacts of the overall MP4TC lands development on the overall study area roadway network will be reviewed when looking at the analysis completed for all TIS reports in support of the lands proposed within the area.

2.4 Development Plan Density

As per the subdivision draft plan dated May 21, 2025, the development statistics for the Hannover lands consist of the following:

- Single Detached Dwellings – 189 Units
- Street Townhouse – 199 Units
- Back-to-Back Townhouse – 254 Units
- Real Lane Townhouses – 34 Units
- Medium Density Residential Dwellings – 1,237 Units
- Neighborhood Centre Mixed Use Dwellings – 330 Units
- 1 Secondary School
- District Park

2.5 Development Road Network

The road network is proposed to be compliant with the road classification set forth as part of the Tertiary Plan for the MP4TC lands. The Hannover lands are proposed to be accessible from the boundary road network as follows:

- One full-move intersection to Trafalgar Road;

The internal roadways intersecting the study boundary road network are proposed as collector roadways, except for Street H intersecting Trafalgar Road, while the remainder of the internal roadway network is proposed to consist of local roads.

2.5.1 Proposed Road Network

Within the subject site, three future collector roads and local roads are proposed, as per the proposed Trafalgar Tertiary Plan road network and illustrated in **Figure 2-2**.

- **Collector G** is a north-south collector road (labeled as Street B), located on the west side of the Draft Plan. It intersects Street A (Louis St. Laurent Avenue / Collector L) to the south and extends to the northern boundary of the site. As outlined in the Trafalgar Tertiary Plan and RNA, Collector G is designed with 20m right-of-way (ROW).

  As confirmed through discussion with the Town, a 20m ROW collector (character) cross section consists of two general purpose travel lanes with on-street parking lane, a sidewalk on at least one side and a multi-use path on the opposite side.

- **Collector H** is a north-south collector (labeled as Street C) located on the east side of the Draft Plan. It intersects the proposed Street A (Louis St. Laurent Avenue / Collector L) to the south and extends to the northern boundary. The collector is designed, with 21.5m ROW as outlined in Trafalgar Tertiary Plan and RNA.

  The 21.5m ROW collector cross section for minor collectors consists of two general purpose travel lanes with an on-street parking lane, sidewalks and in-boulevard bike lanes on both sides of the road.

- **Collector L** is an east-west collector (labeled as Street A – Louis St. Laurent Avenue) intersecting Trafalgar Road to the west and extending to the eastern boundary of the site ultimately to further east through future development lands to Eighth Line. The collector is designed with 26m ROW as outlined in Trafalgar Tertiary Plan and RNA.

  The 26m ROW collector cross section for major collectors consists of two general purpose driving lanes, one turning lane, one on-street parking lane, in-boulevard bike lanes and sidewalks on both sides of the road.

- **Local Roads** are proposed throughout the subject site to provide residents and visitors with access to collector roads and surrounding road networks. The proposed local roads will have a 16m ROW cross-section, consisting of two travel lanes with a sidewalk on at least one side of the road, except for Street H between Trafalgar Road and Collector G with 18m ROW. The local laneways will facilitate the circulation of waste collection vehicles and fire vehicles.

Illustrative ROW cross sections discussed with the Town, provided by DSEL are attached in **Appendix C** and the detailed requirements are discussed in **Section 3.1**.

3 DRAFT PLAN REVIEW

TYLin completed a review of the proposed subdivision draft plan design for the Hannover lands. The proposed design was evaluated based on the standards set forth by the Town of Milton 2024 Engineering and Parks Standards Manual (EPSM), the 2015 Halton Region Access Management Guidelines, the 2024 Tertiary Plan completed for the MP4TC lands, as well as the Transportation Association of Canada (TAC) 2017 Geometric Design Guide for Canadian Roads.

It is considered that the design of the roadways is deemed acceptable and detailed review and findings have been summarized below.

3.1 Right of Way (ROW)

According to the Town of Milton standards, the minimum ROW width requirement for minor collector roads is 24m, 16m for minor local roads, and 11m for laneways.

According to the Tertiary Plan for the MP4TC lands, collector roads are proposed with a ROW width of 21.5m or 20m depending on the roadway. Local roads are proposed with a 16m or 18m ROW width and Laneways are proposed with a ROW width of 8.5m.

The proposed ROW widths established as part of the Tertiary Plan for the MP4TC lands derived specifically for the study area would take precedence over the Town of Milton standards.

Based on the draft plan of proposed subdivisions for Hannover lands, the ROW widths of collector roads, local roads and laneways are summarized in **Table 3-1** below and illustrated in **Figure 3-1**.

Table 3-1 Proposed Right-of-Ways (ROW) Width

ROW Types	Collector Name	Street Index	Design Requirement		Proposed Width
			Town of Milton	Tertiary Plan for the MP4TC lands	
Minor Collector Roads	Collector H	Street 'B'	24m	21.5m or 20m	20m
	Collector G	Street 'C'			21.5m
Minor Local Roads		Streets 'D' – 'G' and 'I' – 'O'	16m	16m or 18m	16m
		Street 'H'			16m and 18m
Laneways		Lane 'A' and 'B'	11m	8.5m	8.5m

The proposed ROW widths of 21.5m and 20m for collector roads, 18m and 16m for local roads, and 8.5m for laneways align with the recommendations specified in the Tertiary Plan for the MP4TC lands. The select laneways with proposed ROW widths of 8.5m are deemed acceptable from the design perspective and are proposed for the Town's review and approval.

3.2 Road Bends

All roadway bends in the draft plan are designed with a radius of 12m. The centreline radius complies with the radius requirement of 12m specified in Ontario Building Code's Access Route Design and is deemed acceptable for the site.

The requirements regarding road bends have been met and are illustrated in **Figure 3-1**.

3.3 Intersection Spacing

According to the Town of Milton standards and TAC, the minimum intersection spacing required along local and collector roadways is measured from centreline to centreline and summarized as below.

- 60m for four-legged intersections (collector and local roads);
- 40m for three-legged intersections (collector and local roads);
- 35m for three-legged intersections (laneways).

In addition, the Region guidelines specify the following minimum spacing for a C4 urban road, measured from stop bar to stop bar, encompassing Trafalgar Road and Britannia Road.

- 300m for a full-move intersection;
- 115m for a right-in/right-out intersection.

The three-legged intersections of Lane 'A' with Street 'J' & Street 'N', and of Lane 'B' with Street 'J' & Street 'N' have been found to be substandard to the above requirements by falling below the absolute TAC minimum of 35m. Additionally, the four-legged intersection of Street 'O' and Street 'M' does not meet the 60m criteria for intersection spacing. However, due to the road classifications being laneways and local roads, they are assumed to have lower traffic volumes and thus are deemed acceptable from a design perspective. All other requirements have been met within the proposed Hannover Draft Plan for Subdivision. These configurations are proposed for the Town's review and approval, which is illustrated in **Figure 3-2**.

3.4 Intersection Angle

According to the Town and Region design standards, intersection angles are subject to the following requirements:

- 90 degrees for intersections with arterial and collector roadways;
- 80 – 100 degrees for intersections with local roads and laneways.

The majority of proposed intersections within the draft plan conform to the above requirements,

with the exception of select collector intersections involving collector roads, which are proposed with intersection angles ranging from 80 to 100 degrees.

All proposed intersection angles, however, fall within the TAC-approved range of 70 – 100 degrees. Given this, the proposed intersection angles would not result in safety concerns and are considered acceptable for the development lands.

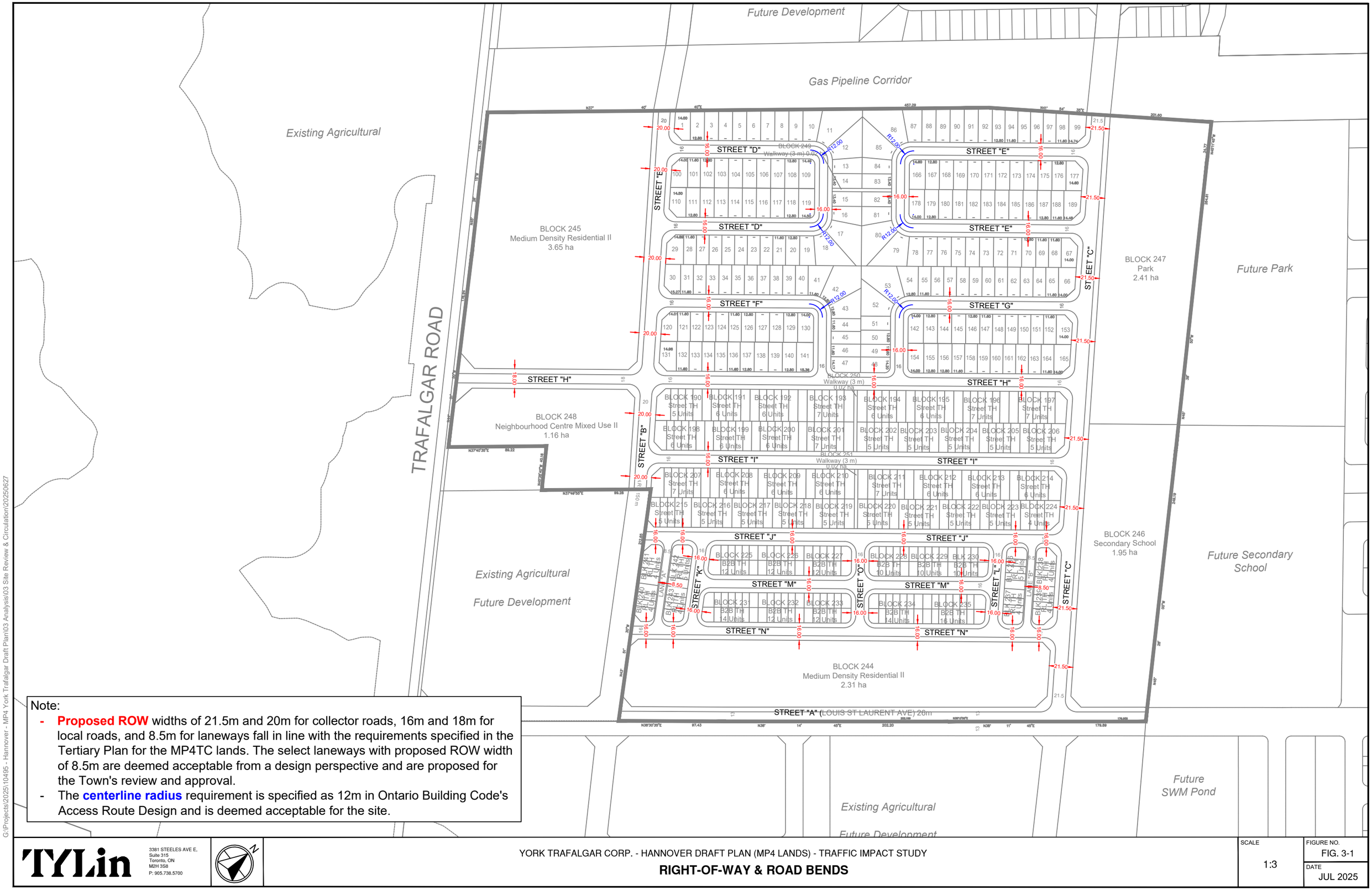
Please refer to **Figure 3-2** for a review of intersection angles within the lands.

3.5 Daylight Triangle / Rounding

According to the Town standards, the following minimum daylight triangle/rounding are applicable to the study intersections:

- 15m x 15m daylight triangles for any intersection with arterial roadways;
- 10m x 10m daylight triangles at collector-to-collector intersections;
- 7.5m x 7.5m daylight triangles at collector-to-local intersections;
- 5m daylight rounding at local-to-local and local-laneway intersections.

All the above minimum requirements have been met or exceeded within the proposed draft plan as illustrated in **Figure 3-3**.



Note:

- **Proposed ROW** widths of 21.5m and 20m for collector roads, 16m and 18m for local roads, and 8.5m for laneways fall in line with the requirements specified in the Tertiary Plan for the MP4TC lands. The select laneways with proposed ROW width of 8.5m are deemed acceptable from a design perspective and are proposed for the Town's review and approval.
- The **centerline radius** requirement is specified as 12m in Ontario Building Code's Access Route Design and is deemed acceptable for the site.

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YORK TRAFALGAR CORP. - HANNOVER DRAFT PLAN (MP4 LANDS) - TRAFFIC IMPACT STUDY

RIGHT-OF-WAY & ROAD BENDS

SCALE 1:3

FIGURE NO. FIG. 3-1

DATE JUL 2025

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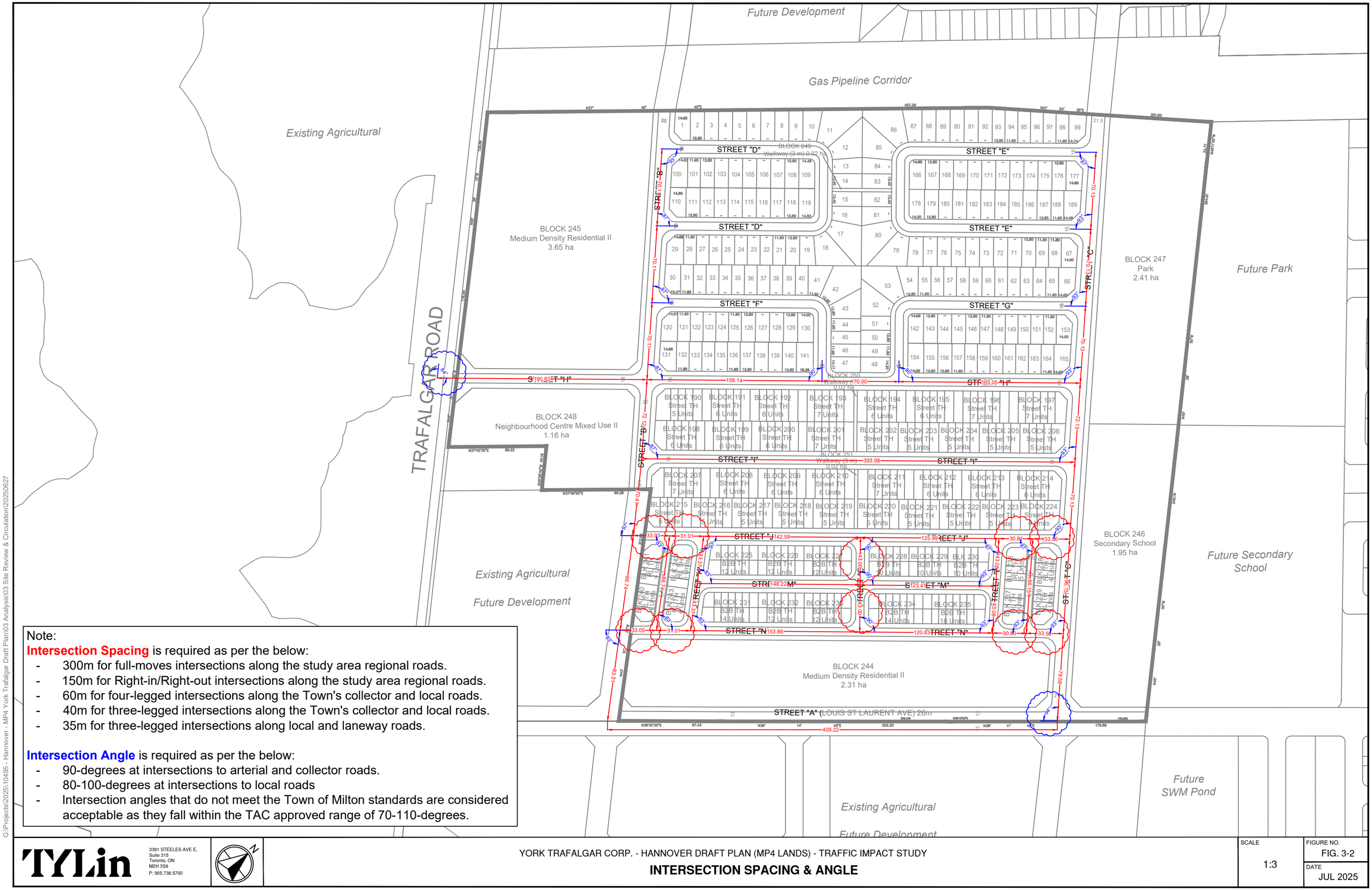

Note:

Intersection Spacing is required as per the below:

- 300m for full-moves intersections along the study area regional roads.
- 150m for Right-in/Right-out intersections along the study area regional roads.
- 60m for four-legged intersections along the Town's collector and local roads.
- 40m for three-legged intersections along the Town's collector and local roads.
- 35m for three-legged intersections along local and laneway roads.

Intersection Angle is required as per the below:

- 90-degrees at intersections to arterial and collector roads.
- 80-100-degrees at intersections to local roads
- Intersection angles that do not meet the Town of Milton standards are considered acceptable as they fall within the TAC approved range of 70-110-degrees.

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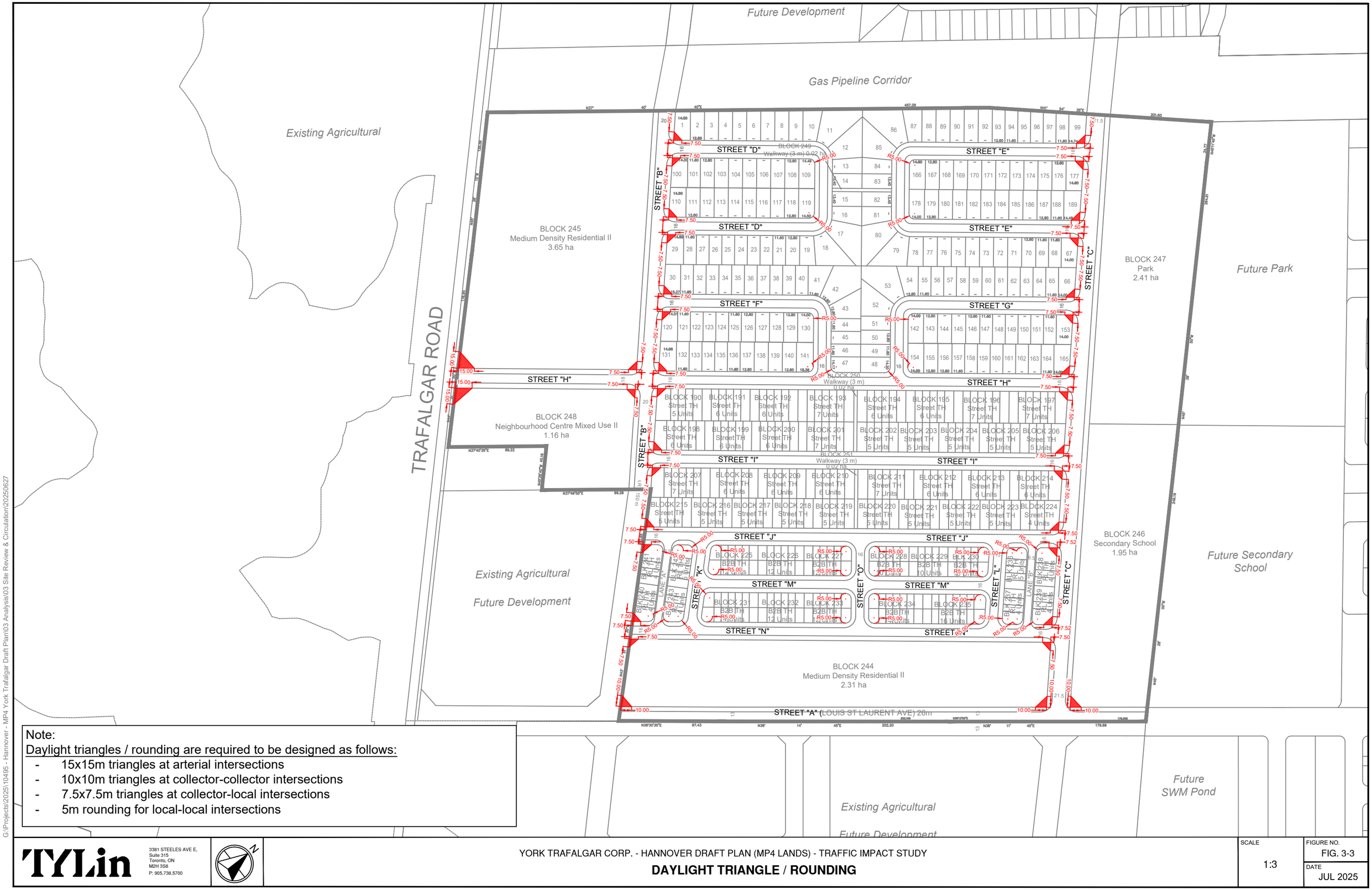
YORK TRAFALGAR CORP. - HANNOVER DRAFT PLAN (MP4 LANDS) - TRAFFIC IMPACT STUDY

INTERSECTION SPACING & ANGLE

SCALE 1:3

FIGURE NO. FIG. 3-2

DATE JUL 2025



Note:
Daylight triangles / rounding are required to be designed as follows:

- 15x15m triangles at arterial intersections
- 10x10m triangles at collector-collector intersections
- 7.5x7.5m triangles at collector-local intersections
- 5m rounding for local-local intersections

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YORK TRAFALGAR CORP. - HANNOVER DRAFT PLAN (MP4 LANDS) - TRAFFIC IMPACT STUDY

DAYLIGHT TRIANGLE / ROUNDING

SCALE 1:3

FIGURE NO. FIG. 3-3

DATE JUL 2025

4 EXISTING CONDITIONS

4.1 Existing Roadway Network

The existing roadways included as part of this traffic impact study assessment include the following:

- **Trafalgar Road** is a north-south major arterial roadway under the jurisdiction of the Region of Halton, as per the Region of Halton Official Plan. Currently, the roadway has a five-lane rural cross-section consisting of two lanes in each direction and a centre median. Trafalgar Road has a posted speed limit of 70 km/h in the vicinity of Britannia Road, with paved shoulders and no sidewalks.
- **Britannia Road** is an existing east-west arterial roadway under the jurisdiction of Halton Region. The roadway has recently been upgraded to an urban six-lane cross-section with a posted speed limit of 60 km/h within the vicinity of the subject site.
- **Derry Road** is an east-west major arterial roadway under the jurisdiction of the Region of Halton, as per the Region of Halton Official Plan. Currently, the roadway has a four-lane rural cross-section consisting of two lanes in each direction. Derry Road has a posted speed limit of 80 km/h within the study area, with paved shoulders and no sidewalks.

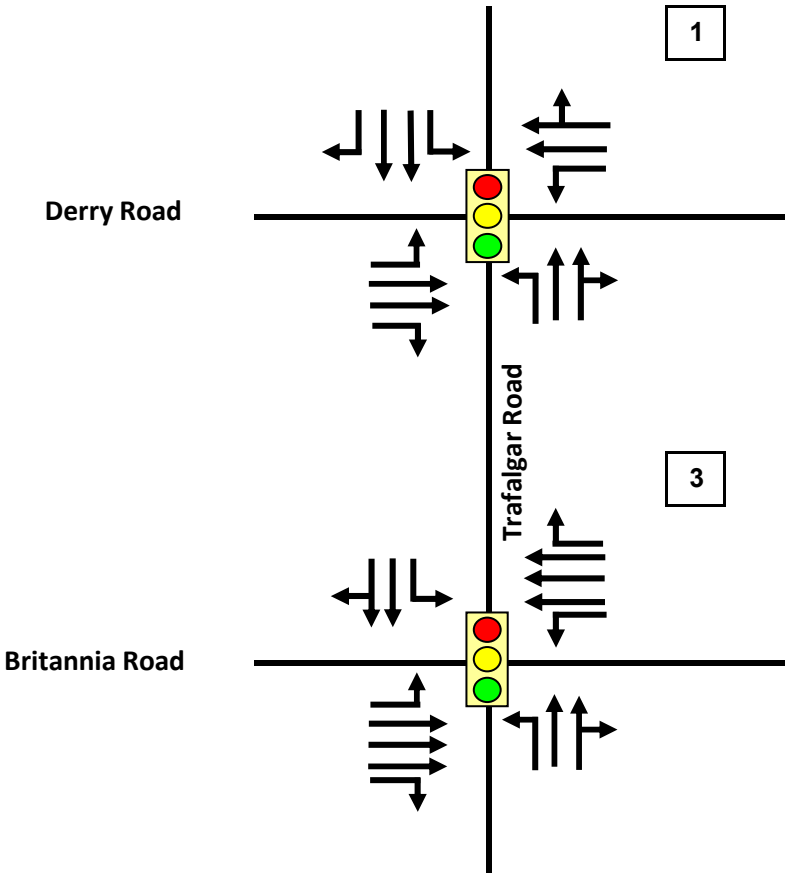
4.2 Existing Traffic Data

Existing signal timing plans (STPs) were obtained from Halton Region Staff for the existing study intersections, as applicable.

Turning movement count (TMC) data was collected on January 18, 2023 from 6:00 AM to 9:00 AM, 11:00 AM to 1:00 PM, and from 4:00 PM to 7:00 PM, from which the weekday AM and PM peak hours were identified.

TYLin's 2023 TMC data, sourced from the RNA study, was collected after the 2022 Highway 401 widening from Mississauga to Milton. To reflect regional traffic growth and align with recent infrastructure improvements, including the Britannia Road widening, an annual growth rate of 2.65% was applied to traffic volumes on regional roadways. This adjusted dataset forms the 2025 baseline traffic volume analysis for this study.

The existing signal timing plans and baseline traffic data are provided in **Appendix D**. Baseline lane configurations and traffic volumes at the existing study area intersections are provided in **Figure 4-1** and **Figure 4-2** respectively.



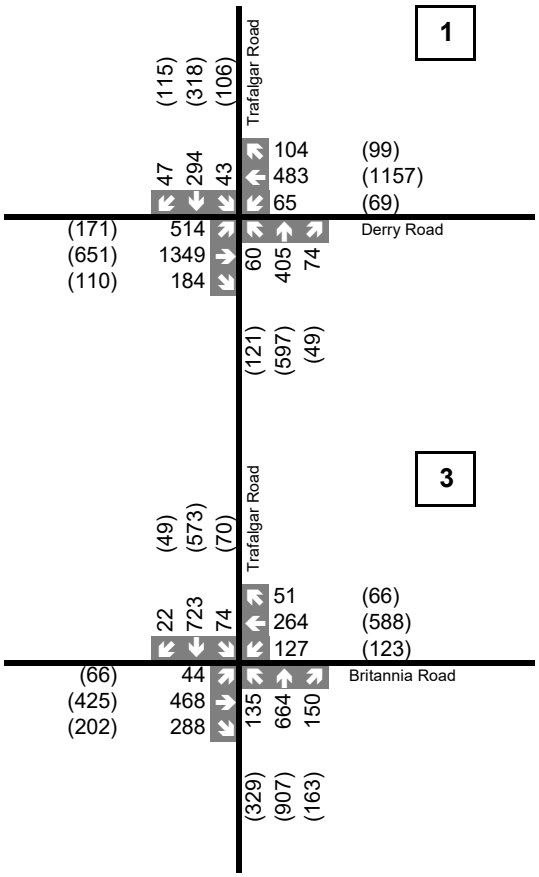
Legend

Signalized Intersection

Existing Lane

Figure 4-1

Existing Lane Configurations



Legend

xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic

TYLin

Figure 4-2

Baseline Traffic Volumes

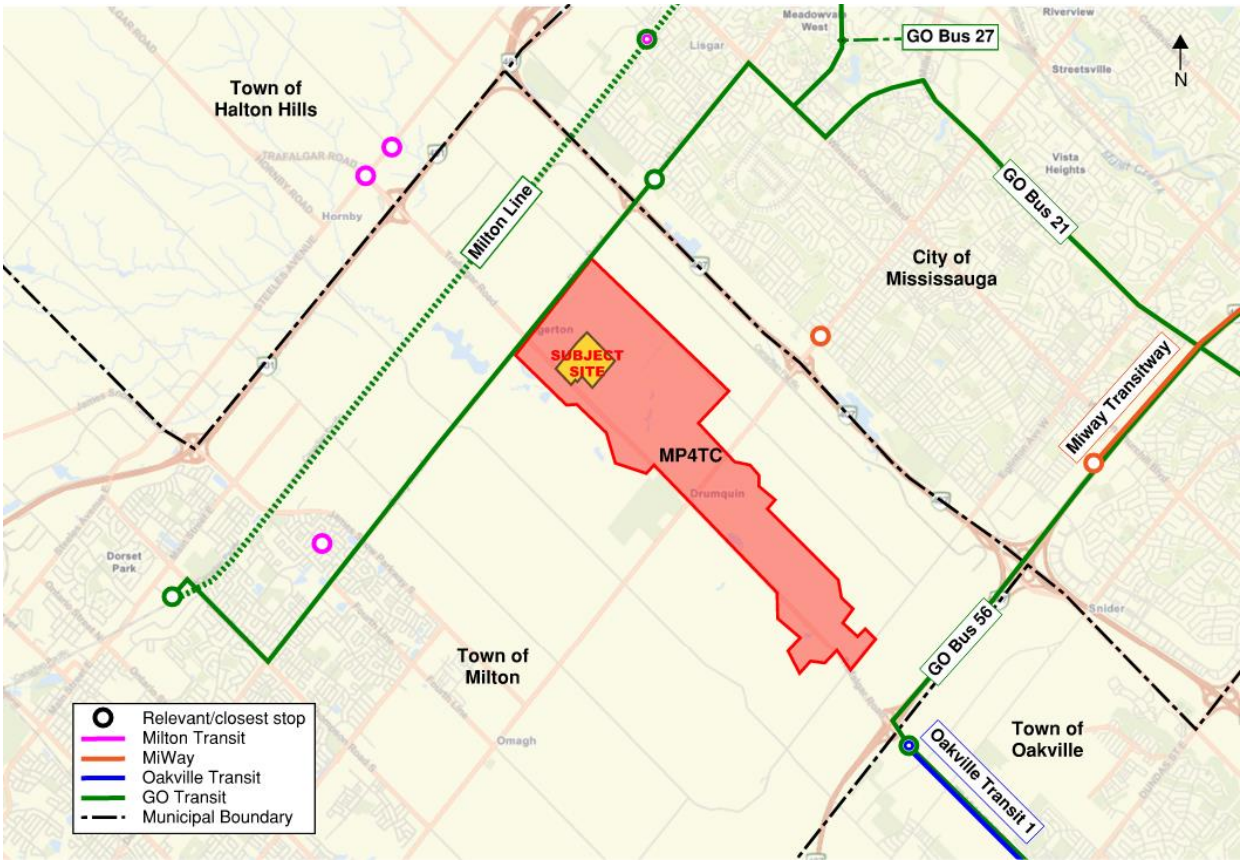
4.3 Existing Active Transportation Network

Given the rural context of the subject site, the existing road network does not provide sidewalks for pedestrians or other dedicated active transportation infrastructure, such as on-road bicycle lanes. While cyclists may use these roads under existing conditions, sharing the general purpose lanes with vehicles traveling at high operating speeds (70 km/h or higher) or using the paved shoulders, these are not considered safe cycling conditions.

4.4 Existing Transit Network

The study area is located outside of existing urban areas that provide local transit services, such as Milton to the northwest, Mississauga to the east, and Oakville to the south. Regional GO Transit routes and Bus Rapid Transit (BRT) Stations are located within the vicinity of the study area, however, the study area is not directly serviced by Regional transit at the time of this report. The existing transit route and stop plan is illustrated in **Figure 4-3**.

Figure 4-3 Existing Transit Routes and Stops



4.4.1 GO Transit

The Milton GO Station, located west of the subject site, is approximately 10 km away from Trafalgar Road. The Milton GO Station provides access to the GO Train Milton Line, GO bus routes 21 – Milton and 27 – Milton / North York.

GO Train Milton Line is a generally east-west train line that operates from Union Station in the City of Toronto to Milton Station in the Town of Milton. The line runs on weekdays with a frequency of as low as 15 minutes. Eastbound service is available between 6:00 AM and 8:30 AM, while westbound service is available between 3:40 PM and 7:10 PM.

There are two stops in the vicinity of the study area.

- Milton Station is located approximately 9 km from the northwestern limit of the subject site and is a 13-minute drive away.
- Lisgar Station, located in Mississauga, is located approximately 7 km from the northeastern limit of the subject and is a 9-minute drive away. This train service is not provided at weekends.

GO Bus Route 21 – Milton is a generally east-west bus route that operates between Union Station in the City of Toronto and Milton Station in the Town of Milton. Eastbound service is provided throughout the day on weekdays, except during the times which overlap with the GO Train schedule, starting from 3:45 AM to 12:25 AM into the following day. The earliest westbound service towards Milton Station departs Union Station at 5:40 AM while the final bus departs at 2:20 AM the next day. Service frequency is approximately 1 hour for both directions. At the weekend the route operates with 1-hour service frequency from 4:55 AM to 2:20 AM.

GO Bus Route 27 – Milton / North York is a generally east-west bus route that operates from Finch Bus Terminal in the City of Toronto to Milton Station in the Town of Milton, with special departures stopping at Meadowvale Go Station. The route runs on weekdays in the eastbound direction between 5:05 AM and 18:25 PM. Westbound service is provided between 5:30 and 12:15 AM on weekdays. During the weekends, only one complete route service is provided in the eastbound direction, departing Milton GO at 5:35 AM and in the westbound direction, departing Finch Bus Terminal at 6:30 AM.

The nearest stop of Go Bus route 21 and 27 is at Ninth Road / Derry Road, which is located approximately 4 km from the study area.

4.4.2 Milton Transit

The urban area of the Town of Milton is located to the northwest of the study area, and Milton Transit operates a total of 10 bus routes. The closest Milton Transit bus stops are located at the Lisgar GO Station, Toronto Premium Outlets, Eighth Line at Steeles Avenue, and Trudeau Drive at Croft Avenue as indicated in **Figure 4-3**.

4.4.3 MiWay Transit

The City of Mississauga is generally located east and southeast of the study area, and MiWay Transit operates an extensive network of bus routes through the entire city. The closest bus stop is located at Britannia Road and the Ninth Line which is approximately 2 km from the eastern edge of MP4 area. **Figure 4-3** illustrates the existing transit routes in proximity to the study area.

4.4.4 City of Mississauga's Transitway

The western terminus of the Mississauga Transitway (BRT service that serves as an east-west transit spine through Mississauga), located at the interchange of Highway 403 and Winston Churchill, is approximately an 8 km drive away from the MP4 area and provides potential connections to other Mississauga bus routes and Toronto transit at the eastern terminus of the Transitway.

5 BACKGROUND CONDITIONS

5.1 Study Horizon Years

In this TIS, the horizon years of 2031 (build-out year of the Hannover Lands) and 2041 (ten-year horizon) were adopted to assess the future traffic conditions. The study horizons align with the horizons assessed in the Trafalgar Tertiary Plan RNA study. The future traffic volume in the 2031 horizon will include the Hannover Lands trips plus the balance of MP4 Phase 1 lands, while the 2041 horizon will further incorporate the balance of MP4 Phase 2 lands.

5.2 Study Area Road Network Improvement

The existing Trafalgar Road within the study area is expected to have road improvements completed by 2031, as per Halton Region's TMP, and recommendations made in Milton's TMP update (Feb 2025). Improvements to the existing road network to accommodate future development are also addressed in this report, as well as the RNA study.

The Region's TMP classifies Trafalgar Road as C4 Urban roads with a 47 metre right-of-way that includes six vehicular travels lanes, as shown in **Figure 5-1**, excerpts from the Halton TMP.

Subject to the Regional Trafalgar Road EA, the 47 m ROW is expected to accommodate the illustrated road elements, with the remaining width of approximately 7.6 m allocated for boulevards on each side and 5 m for the median. At intersections, the median is expected to widen to 9 m to accommodate dual left-turn lanes and centre median, while the boulevard on each side could be used to provide the required width for auxiliary right-turn lanes.

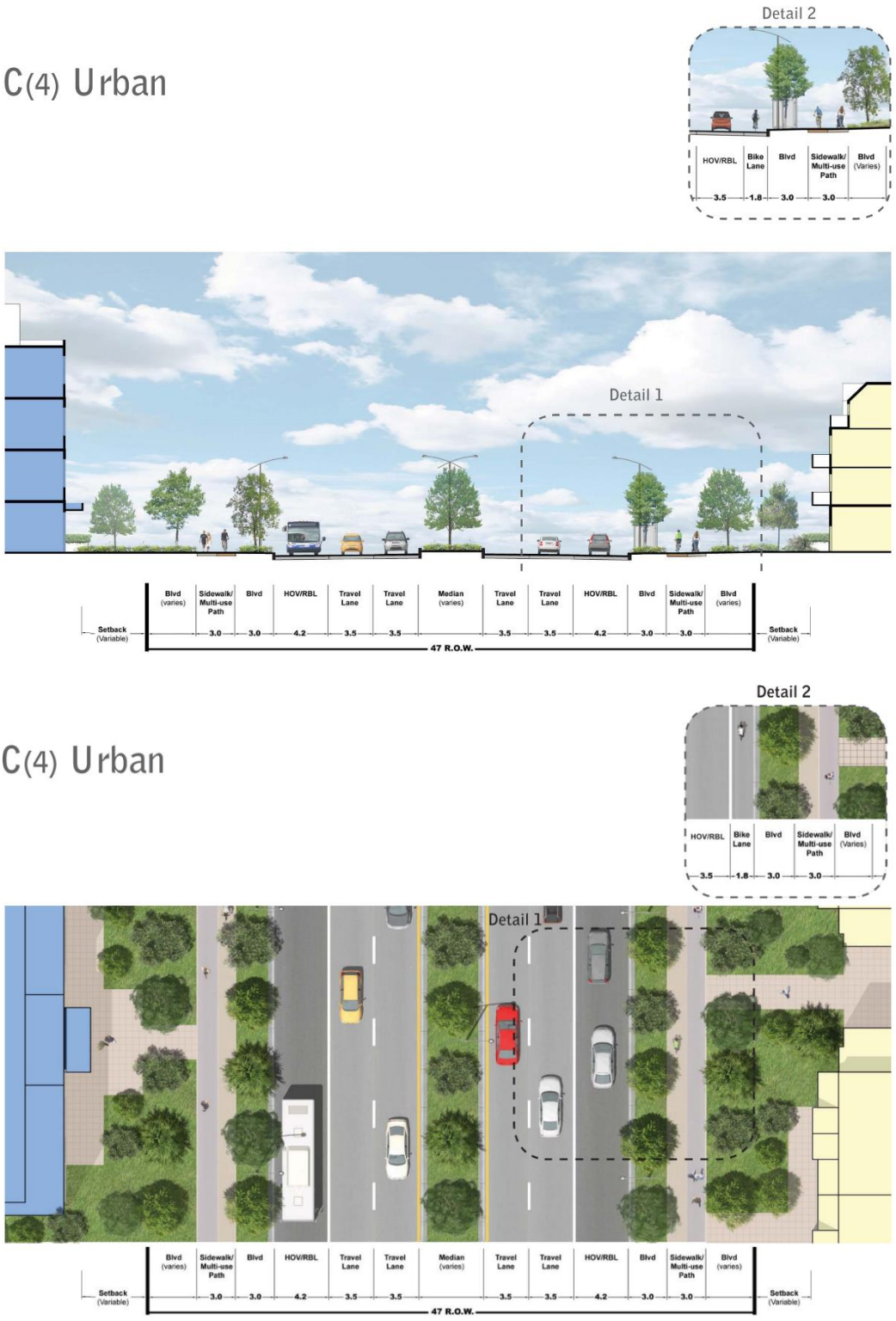
This will result in the existing roadways being widened from two lanes in each direction to three lanes, accommodating a High Occupancy Vehicle (HOV) lane in addition to two general purpose travel lanes in each direction. The urbanization of the roads will occur when they are widened, and the C4 urban road cross section includes provision for new active transportation infrastructure such as sidewalks, multi-use paths, and/or on-street bicycle lanes.

According to Halton Region's 2024 Budget and Business Plan, construction to widen Trafalgar Road to six lanes within the RNA study area is scheduled to begin in 2029/2030. Britannia Road, which was widened to six lanes near the end of 2024, was analyzed as a six-lane road in this assessment.

To assess the impacts of the Regional Road widening projects, Trafalgar Road and Britannia Road were evaluated as six-lane roads under 2031 future traffic conditions, as well as the 2041 horizon. lane configuration improvements are proposed under both future background and total traffic scenarios to accommodate projected traffic volumes. These proposed improvements are

consistent with the recommendations outlined in the Transportation Master Plan for the Trafalgar and Agerton Secondary Plan Areas Traffic Addendum, dated March 2022 (Trafalgar TMP).

Figure 5-1 Halton Region C(4) Urban 2031 Road Cross Section



5.3 Background Corridor Growth

In alignment with the methodology used in the MP4TC RNA study, the background growth rates for the Hannover Lands study area were derived consistently with the MP4 RNA analysis for the 2031 and 2041 planning horizons. These growth rates account for cumulative impacts of population and employment forecasts based on the Region's Joint Best Practices Estimates (JBPE) travel demand model to 2051 including background developments such as the Trafalgar GO Station and Agerton lands.

The Trafalgar GO Station is a significant transit development within the vicinity of the subject site. It is proposed to be located within the Agerton Secondary Plan Lands, north of the Trafalgar Tertiary Plan area. The Trafalgar GO Station is proposed to be placed within the Major Transit Station Area (MTSA) to provide effective rail connections to users as this is planned to have high-density employment and residential areas. As per the Transportation Master Plan for the Trafalgar and Agerton Secondary Plan (dated March 2022), the preferred location for the proposed Trafalgar GO Station is west of Trafalgar Road along the existing rail line.

For the 2031 horizon, the same background growth rate of 2.65%, applied to Regional Roads in the MP4 RNA, was used to project traffic volumes within this study area.

For the 2041 horizon, growth rates provided by Region and Town staff were applied to the 2031 volumes to reflect full background development impacts. As the Town's growth rates did not include all of these developments, a combined growth rate approach was used for Town roads. Regional growth rates were added to the Town's to better capture total background traffic growth, in line with MP4 RNA assumptions.

The updated growth rates applied to the study area corridors are summarized in **Table 5-1**.

Table 5-1 Updated Growth Rates Applied to Network

Corridor	2031 to 2041
Trafalgar Road	1%
Derry Road and Britannia Road east of Trafalgar Road	2%

5.4 Background Development

The RNA study incorporates a set of tertiary plan land uses and statistics provided by SGL for trip generation estimates. These site statistics are derived from the JBPE for the Trafalgar Secondary Plan area, as provided by the Town to the MP4TC Local Operations Group (LOG).

For this TIS, the site statistics and trip generation estimate from the RNA study have been adjusted by excluding the subject site to be included in background development traffic.

5.4.1 2031 Background Development – MP4 Phase 1

For the 2031 horizon year, the MP4 Phase 1 developments, excluding the subject site, were used to compute the 2031 background development traffic volume. To ensure consistency with RNA, the same site statistics assumption was adopted, and the corresponding trip generations were derived using Institute of Transportation Engineers (ITE) 10th edition trip rates.

The ITE Land Use Codes for residential and non-residential land uses within MP4 Phase 1 are presented in **Table 5-2**, with detailed trip generation calculations provided in **Appendix F**. The overall MP4 Phase 1 developments were expected to generate a total of 2,972 vehicle trips during the AM peak hour, consisting of 1,199 inbound and 1,773 outbound trips, and 2,742 trips during the PM peak hour, consisting of 1,597 inbound and 1,145 outbound trips.

5.4.1.1 Updated Subdivision Draft Plan

Within the MP4 Phase 1 developments, ongoing subdivision applications for specific land parcels provide the most current site statistics throughout the application process. As a result, updated statistics for these parcels were utilized instead of RNA assumptions and excluded from the trip generation calculation using ITE 10th edition trip rates above.

The total site statistics and corresponding ITE Land Use Codes for the updated draft plan are summarized in **Table 5-2**. The trip generation was derived separately, using ITE 11th Edition trip rates to reflect the latest development parameters.

This TIS incorporated the updated draft plans, including the subdivisions developed by Frontenac Forest Estates Inc., White Squadron Inc. and Remington Group Inc. The overall design parameters include 1,070 single family detached houses, 1,405 multi-family housing (low-rise) units, 738 multi-family housing (mid-rise) units, 3,023 multi-family housing (high-rise) units, shopping centre of 182,000 ft^2 GFA and elementary school of 2,175 students.

- Frontenac Forest Estates Inc. Subdivision – Trinison

The proposed Frontenac subdivision development is located on the northern end of the MP4TC lands, bounded by Derry Road to the north, Eighth Line to the east, Trafalgar Road to the west and future development in MP4TC lands to the south. It is proposed to comprise 435 units of detached house dwellings, 855 units of townhouse dwellings, 356 units of medium density residential units, 701 units of neighbourhood centre, retail and commercial areas and 1 school.

Trip generation for the Frontenac development was estimated by applying ITE 11th Edition trip rates, with calculations detailed in **Appendix F**. It was expected to generate a total of 1,278 vehicle trips during the AM peak hour, consisting of 483 inbound and 795 outbound trips, and 1,297 trips during the PM peak hour, consisting of 749 inbound and 548 outbound trips.

- White Squadron Development Corp. Subdivision – Mattamy Homes

The proposed White Squadron subdivision development is located on the northern half of the MP4TC lands, bounded by Trafalgar Road to the west, Britannia Road to the south and with adjacent MP4TC development lands in other directions. It is proposed to comprise 397 units of detached house dwellings, 395 units of townhouse dwellings, medium density residential dwellings (assumed 50 units), neighbourhood centre (assumed 1,371 units), retail and commercial areas and 1 school.

Trip generation for the White Squadron development was estimated by applying ITE 11th Edition trip rates, with calculations detailed in **Appendix F**. It was expected to generate a total of 1,039 vehicle trips during the AM peak hour, consisting of 387 inbound and 652 outbound trips, and 1,125 trips during the PM peak hour, consisting of 648 inbound and 477 outbound trips.

- Remington Group Inc. Subdivision – Remington Group

The proposed Remington subdivision development is located in the northern half of the MP4TC lands within the Town of Milton. The site is bounded by Trafalgar Road to the west, a Natural Heritage System to the south and with adjacent development lands in other directions. It is proposed to comprise 238 units of single detached house dwellings, 155 units of townhouse dwellings, medium density residential dwellings (assumed 332 units), neighbourhood centre (assumed 951 units) and 1 school.

Trip generation for the Remington development was estimated by applying ITE 11th Edition trip rates, with calculations detailed in **Appendix F**. It was expected to generate a total of 825 vehicle trips during the AM peak hour, consisting of 318 inbound and 507 outbound trips, and 612 trips during the PM peak hour, consisting of 368 inbound and 244 outbound trips.

Table 5-2 MP4 Phase 1 (without Hannover Lands) – Overall Site Statistics

Land Use Type	Land Use	ITE Land Use Code	Parameters		Total
			RNA Assumption	Updated Draft Plan	
Residential	Single Family Detached	LUC 210	1,060	1,070	2,130
	Multifamily Housing (Low-rise)	LUC 220	812	1,405	2,217
	Multifamily Housing (Mid-rise)	LUC 221	263	738	1,001
	Multifamily Housing (High-rise)	LUC 222	3,279	3,023	6,302
	Total Residential Units		**5,414**	**6,236**	**11,650**
Non-Residential	Shopping Center (ft^2)	LUC 820	122,000	182,000	304,000
	Elementary School (Students)	LUC 520	1,450	2,175	3,625
	High School (Students)	LUC 530	1,500	-	1,500
	District Park (Acres)	LUC 411	15	-	15

5.4.2 2041 Background Development – MP4 Full Build-out

For the 2041 horizon year, the design parameters for the full build-out of the MP4 developments, excluding the subject site, were utilized, together with updated draft plan statistics, to estimate the 2041 background development trip generation.

Similar to the 2031 horizon, trip generation estimates were derived using ITE 10th Edition trip rates for site statistics from the RNA and ITE 11th Edition trip rates for updated site statistics from the ongoing subdivision draft plans. The overall site statistics are presented in **Table 5-3** and the corresponding trip generation calculations for the 2041 background development traffic are summarized in **Appendix F**.

The overall MP4 full build-out developments were expected to generate a total of 6,405 vehicle trips during the AM peak hour, consisting of 2,380 inbound and 4,025 outbound trips, and 6,301 trips during the PM peak hour, consisting of 3,700 inbound and 2,601 outbound trips.

Table 5-3 MP4 Full Build-out (without Hannover Lands) – Overall Site Statistics

Land Use Type	Land Use	ITE Land Use Code	Parameters		Total
			RNA Assumption	Updated Draft Plan	
Residential	Single Family Detached	LUC 210	2,296	1,070	3,366
	Multifamily Housing (Low-rise)	LUC 220	2,505	1,405	3,910
	Multifamily Housing (Mid-rise)	LUC 221	754	738	1,492
	Multifamily Housing (High-rise)	LUC 222	7,705	3,023	10,728
	Total Residential Units		**13,260**	**6,236**	**19,496**
Non-Residential	Shopping Center (ft^2)	LUC 820	271,000	182,000	453,000
	Elementary School (Students)	LUC 520	3,625	2,175	5,800
	High School (Students)	LUC 530	1,500	-	1,500
	District Park (Acres)	LUC 411	30	-	30

5.5 Future Background Traffic Volumes

For each horizon year, future background traffic volumes were derived by applying annual background corridor growth rates to the baseline traffic volumes and incorporating traffic from background developments.

For the 2031 horizon, growth rates were applied to existing baseline volumes without including traffic from the Agerton development or the full build-out of the Trafalgar Tertiary Plan's collector road network and arterial-to-collector intersections, as confirmed through RNA discussions with Region and Town staff.

For the 2041 horizon, baseline volumes were updated to reflect continued growth, and background volumes were adjusted to account for cumulative traffic from planned developments, including the Agerton lands.

The resulting 2031 and 2041 future background volumes are provided in **Figure 5-2** and, **Figure 5-3** respectively.

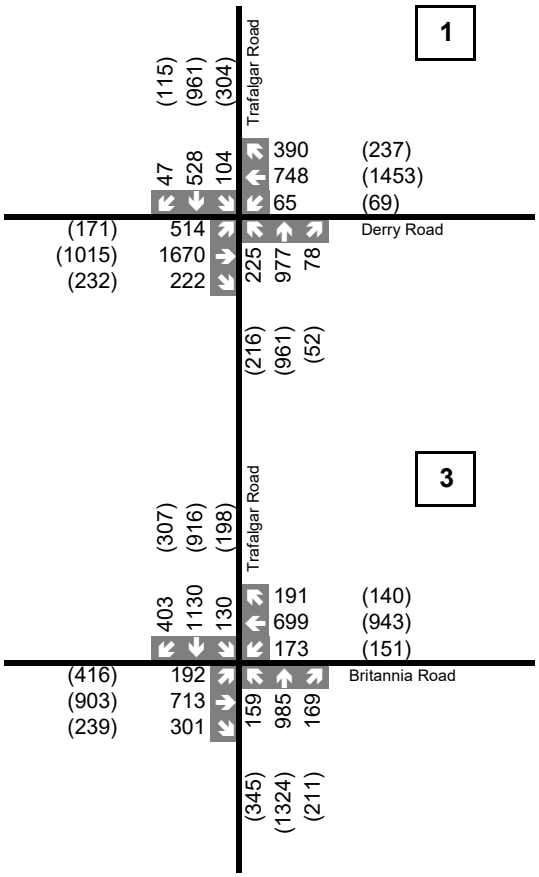


Figure 5-2

2031 Future Background Traffic Volumes

Legend

xx	A.M. Peak Hour Traffic
(xx)	P.M. Peak Hour Traffic

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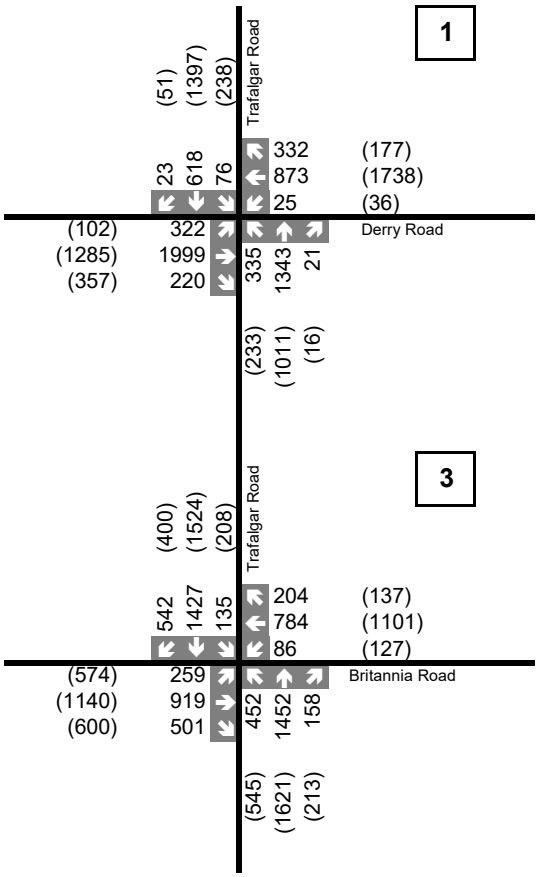

Legend

xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic

Figure 5-3

2041 Future Background Traffic Volumes

5.6 Future Active Transportation Network

The active transportation network planned across the RNA and Trafalgar Tertiary Plan area consists of a range of facilities including sidewalks, buffered cycle track / in-boulevard bike lanes, multi-use paths (MUPs), and off-road trails. These elements are intended to support walking and cycling connections throughout the community.

MUPs are identified along both sides of Trafalgar Road and Britannia Road, aligning with Halton Region's 2015 Active Transportation Master Plan. These facilities are expected to enhance connections across the Tertiary Plan area and will be confirmed through future stages of the Municipal Class Environmental Assessment process.

Within the RNA, the road network includes various classifications of collector roads with right-of-way (ROW) widths ranging from 20 to 26 metres. These collectors are planned to accommodate active transportation facilities such as sidewalks, MUPs and buffered cycle tracks or in-boulevard bike lanes, with specific configurations depending on the road classification and ROW. The Hannover lands includes three collector roads, Collector G (20m ROW), Collector H (21.5m ROW) and Collector L (26m ROW), which will contribute to the broader connectivity framework.

An off-road trail network is also proposed, offering connections between residential areas and key community amenities including parks, schools, and the Natural Heritage System. These trails complement the on-street facilities and are planned to integrate with both internal and external active transportation systems.

Figure 5-4 illustrates the proposed active transportation and trail networks, highlighting key connectivity points and community amenities.

Figure 5-4 Active Transportation Network

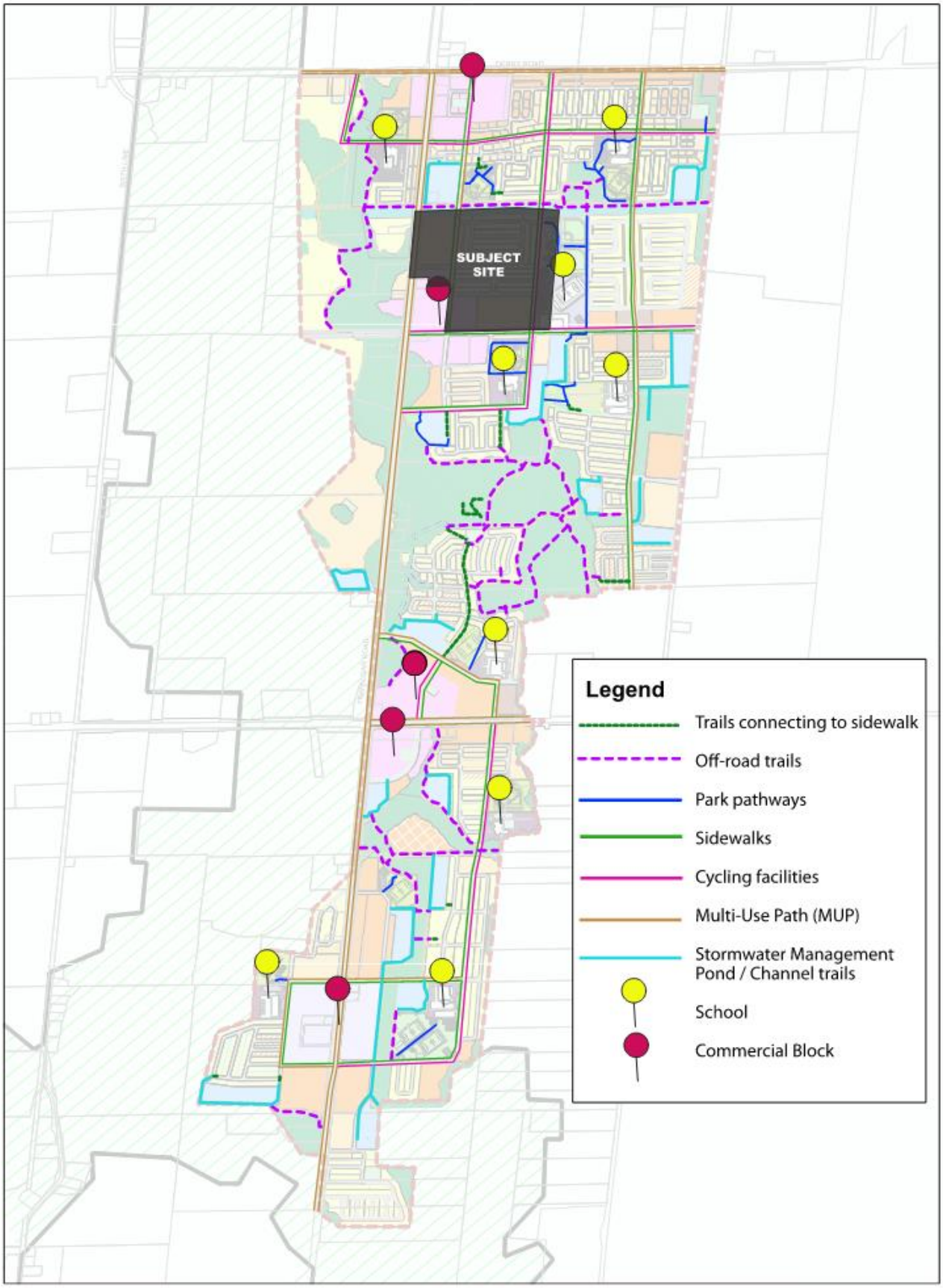

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Figure 5-4
MP4TC Active Transportation Network

5.7 Future Transit Network

As identified in Halton Region's 2011 TMP, a future GO Train Station on the Milton line is to be located north of the subject lands. The proposed location is to be located along the existing Milton Line railway and its crossing of Trafalgar Road to the north of Derry Road. This future GO Train Station has also been identified within the TMP for the Trafalgar Agerton Secondary Plan area. The construction of a GO Train station at this location will provide future residents of the subject site access to regional, higher-order transit within the immediate vicinity of the site.

Based on Figure 7.1 – Transit Servicing Concept in Halton Region's TMP (attached in **Appendix E**), Trafalgar Road has been identified as a higher order transit corridor with conceptual plans for transit in reserved right of way. Similarly, Britannia Road within the MP4 RNA study area (south of the subject site) has also been identified as a regional higher order transit corridor and has been planned in concept to have semi-exclusive and/or exclusive right of way for transit operations. The Trafalgar Tertiary Plan has located higher density development along Trafalgar Road to provide the needed density of residences and employment uses to support the planned higher order transit corridor.

The planned regional higher order transit corridors within the broader Trafalgar Agerton Secondary Plan area could be further supplemented by local transit routes. These local transit routes would serve the residential areas and neighbourhood mixed use nodes while also providing connections to regional transit, such as GO Train and bus routes at the future GO Station within the Agerton lands. Provision of local transit routes through the subject site and the MP4 RNA area will be confirmed through the development application process.

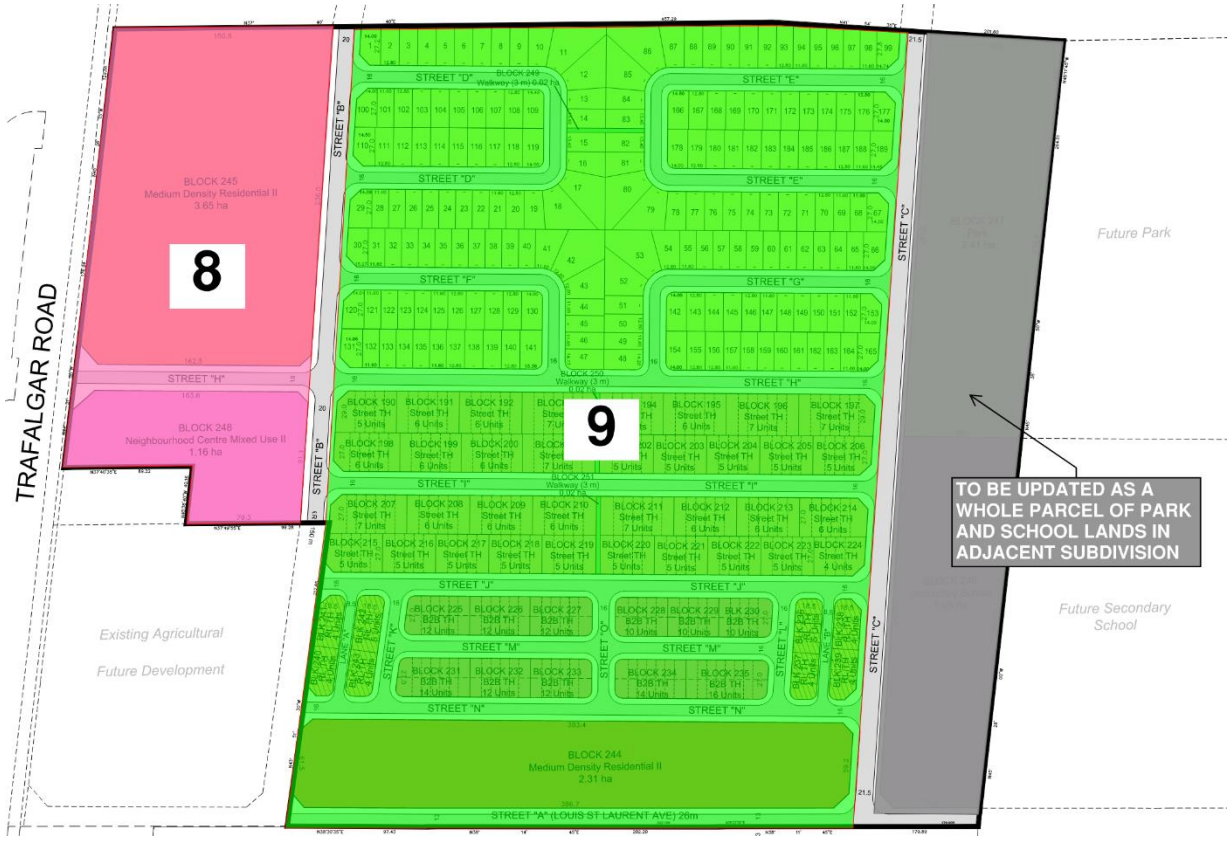
6 SITE GENERATED TRAFFIC

6.1 Traffic Analysis Zones

The overall Trafalgar Tertiary Plan was divided into a total of 38 Traffic Analysis Zones (TAZs) for trip generation and assignment. The TAZ boundaries are generally defined by the collector road network and Natural Heritage System features, mostly conforming to the shape of future development blocks where possible.

Two (2) out of a total of 38 TAZs (Zone 8 and 9) within the Hannover lands are identified as the proposed subdivision for trip generation purposes. The resulting trips were then assigned to the collector road and broader transportation network based on each TAZ's location within the Tertiary Plan. The boundaries of these 2 TAZs are illustrated in **Figure 6-1**.

Figure 6-1 Traffic Analysis Zones (TAZ) for Hannover Lands



6.2 Mode Split

A non-automobile mode split reduction of 28% was applied to trips generated by all land use types in the Tertiary Plan area. The 28% mode split reduction is in line with that applied in the Trafalgar TMP, which was explained as being applied "as per the 2031 targets specified by the Region's 2011 TMP (5 percent active transportation, 20 percent transit, and 3 percent other transportation demand management)".

Taking into account the future active transportation infrastructure, trail network, High-Occupancy-Vehicle (HOV) / Transit priority lanes, and Trafalgar GO Stations that will be implemented within, or in close proximity to, the Trafalgar Tertiary Plan, it is TYLin's opinion that a mode split reduction of 28% is reasonable.

6.3 Site Trip Generation

As outlined in **Section 2.4**, the proposed development includes a mix of land uses comprising single-family detached dwellings, townhouse dwellings, a neighbourhood centre development, medium density residential developments, a secondary school, and lands designated for other uses. For the purpose of trip generation analysis, the development components have been classified using the Institute of Transportation Engineers (ITE) Land Use Codes (LUCs), as per the ITE Trip Generation Manual, 11th Edition.

Table 6-1 provides a summary of the land use types and corresponding unit quantities used in the trip generation analysis for the Hannover Draft Plan – Phases 8 and 9.

Table 6-1 Hannover Draft Plan– Overall Site Statistics for Trip Generation

Land Use Type	Proposed Land Use	ITE Land Use	LUC	Parameters	Units
Residential	Single Detached House	Single-Family	210	189	Residential Units
	Street Townhouse	Multi-Family Housing (Low-Rise)	220	487	
	Back to Back Townhouse				
	Medium Density Residential Dwellings	Multi-Family Housing (Mid-Rise)	221	1,237	
	Neighbourhood Centre Mixed Use Dwellings	Multi-Family Housing (High-Rise)	222	330	
			Total Residential Units	**2,243**	

Site trips of different zones, illustrated in **Figure 6-1**, were estimated using the ITE 11th Edition LUCs as noted in **Table 6-1**. The detailed estimated trip generation of the development from each zone are summarized in **Table 6-2** to **Table 6-3**.

Table 6-2 Zone 8 – Trip Generation Summary

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Multi-family Housing (Low-rise) ITE LUC 220 120 Units	Trip Generation Equation or Average Rate	T = 0.31(X) + 22.85			T = 0.43(X) + 20.55		
	Directional Split	24%	76%	-	63%	37%	-
	Gross Trips	14	46	60	45	27	72
	Mode Split Reduction (28%)	-4	-13	-17	-13	-8	-21
	Net Trips	**10**	**33**	**43**	**32**	**19**	**51**
Multi-family Housing (Mid-rise) ITE LUC 221 810 Units	Trip Generation Equation or Average Rate	T = 0.44(X) - 11.61			T = 0.39(X) + 0.34		
	Directional Split	23%	77%	-	61%	39%	-
	Gross Trips	79	266	345	193	123	316
	Mode Split Reduction (28%)	-22	-74	-96	-54	-34	-88
	Net Trips	**57**	**192**	**249**	**139**	**89**	**228**
Multi-family Housing (High-rise) ITE LUC 222 330 Units	Trip Generation Equation or Average Rate	T = 0.22(X) +18.85			T = 0.26(X) +23.12		
	Directional Split	26%	74%	-	62%	38%	-
	Gross Trips	24	67	91	68	41	109
	Mode Split Reduction (28%)	-7	-19	-26	-19	-11	-30
	Net Trips	**17**	**48**	**65**	**49**	**30**	**79**
Total Trips Zone 8		**84**	**273**	**357**	**220**	**138**	**358**

Table 6-3 Zone 9 – Trip Generation Summary

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing ITE LUC 210 189 Units	Trip Generation Equation or Average Rate	Ln(T) = 0.91Ln(X) + 0.12			Ln(T) = 0.94Ln(X) + 0.27		
	Directional Split	25%	75%	-	63%	37%	-
	Gross Trips	33	100	133	114	67	181
	Mode Split Reduction (28%)	-9	-28	-37	-32	-19	-51
	Net Trips	**24**	**72**	**96**	**82**	**48**	**130**
Multi-family Housing (Low-rise) ITE LUC 220 367 Units	Trip Generation Equation or Average Rate	T = 0.31(X) + 22.85			T = 0.43(X) + 20.55		
	Directional Split	24%	76%	-	63%	37%	-
	Gross Trips	33	104	137	112	66	178
	Mode Split Reduction (28%)	-9	-29	-38	-31	-18	-49

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
	Net Trips	**24**	**75**	**99**	**81**	**48**	**129**
Multi-family Housing (Mid-rise) ITE LUC 221 427 Units	Trip Generation Equation or Average Rate	T = 0.44(X) - 11.61			T = 0.39(X) + 0.34		
	Directional Split	23%	77%	-	61%	39%	-
	Gross Trips	36	122	158	102	65	167
	Mode Split Reduction (28%)	-10	-34	-44	-29	-18	-47
	Net Trips	**26**	**88**	**114**	**73**	**47**	**120**
Total Trips Zone 9		**74**	**235**	**309**	**236**	**143**	**379**

Table 6-4 Hannover Lands Total – Trip Generation Summary

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Total Trips	Gross Trips	219	705	924	634	389	1023
	Mode Split Reduction (28%)	-61	-197	-258	-178	-108	-286
	Net Trips	158	508	666	456	281	737
Adopted Trips in **Hannover TIS**		**158**	**508**	**666**	**456**	**281**	**737**
Adopted Trips (TAZ 8 and 9) in **Trafalgar RNA**		127	392	519	395	245	640
Net Difference		**+31**	**+116**	**+147**	**+61**	**+36**	**+97**

As summarized in **Table 6-4**, a total of 666 net auto trips, consisting of 158 inbound and 508 outbound trips, are estimated to be generated by the Hannover Lands during the weekday AM peak hour. During the weekday PM peak hour, 456 inbound and 281 outbound net auto site trips are estimated, totaling 737 trips.

The updated Hannover Lands (TAZs 8 and 9) trip generation would result in a net difference of +147 and +97 two-way trips in the AM and PM when compared to MP4 RNA Study.

6.4 Site Trip Distribution and Assignment

To ensure consistency, the site trip distribution and assignment adopted for this TIS is sourced from the RNA study conducted for the MP4TC area. The key assumptions made in the RNA study are as follows.

Due to the current rural / greenfield status of the Hannover lands, the Transportation Tomorrow Survey (TTS) data would not properly reflect the future land uses and associated travel patterns within the study area. Further, near future infrastructure improvements, the proposed GO Station, and other proposed developments will all contribute to changes in existing traffic patterns within

the vicinity of the study area.

The Trafalgar TMP estimated the trip distribution of the Trafalgar and Agerton Secondary Plans using the Region's 2031 EMME model. The external distribution was broken down by locations in the GTA, as summarized in Table 4-7 of the 2022 Trafalgar TMP Addendum, which is provided in **Appendix G**. TYLin used Table 4-7 as a base for trip distribution for the RNA area (also applied to this TIS study area) to remain in line with data upon which the Trafalgar TMP was based. TYLin's distribution calculations based on the percentages and destinations in the TMP's Table 4-7 have also been provided in **Appendix G**.

Table 6-5 summarizes the overall trip distribution for the TIS study area, while **Table 6-6** details the trip distribution at specific external gateways along the study area boundaries.

Table 6-5 Overall Directional Trip Distribution

Direction	AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
North	21.7%	26.7%	26.7%	21.7%
South	15.3%	14.5%	14.5%	15.3%
East	19.1%	14.8%	14.8%	19.1%
West	43.9%	44.0%	44.0%	43.9%
Total	**100%**	**100%**	**100%**	**100%**

Table 6-6 External Gateway Trip Distribution

Direction	AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Trafalgar Road to/from North	21.74%	26.74%	26.74%	21.74%
Derry Road to/from East	5.25%	4.12%	4.12%	5.25%
Britannia Road to/from East	8.45%	6.52%	6.52%	8.45%
Lower Baseline to/from East	5.39%	4.11%	4.11%	5.39%
Trafalgar Road to/from South	15.28%	14.47%	14.47%	15.28%
Lower Baseline to/from West	1.76%	1.91%	1.91%	1.76%
Britannia Road to/from West	28.53%	26.87%	26.87%	28.53%
Derry Road to/from West	13.60%	15.26%	15.26%	13.60%
Total	**100%**	**100%**	**100%**	**100%**

6.5 Site Trip Assignment

Site assignment was based on a TAZ-specific level, as trip generation estimates were tailored to each TAZ's proposed land uses and residential unit types. Trips were further subdivided into internal and external trips for assignment purposes.

The location of existing and future study intersections throughout the TIS study area is outlined in **Figure 6-2**, providing the intersection ID number assigned to each intersection and collector road names to be used in conjunction with site traffic volume figures.

The estimated site traffic volumes at intersections in the study area are provided in **Figure 6-3**.

6.5.1 External Assignment

External trips to/from each TAZ were assigned first to a collector road within or adjacent to the TAZ and then traveled via logical routing to one of the eight external road network gateways, dependent upon the direction of the trip and overall distribution of trips.

6.5.2 Internal Assignment

Internal site assignment was applied to non-residential land uses such as schools and commercial blocks that would attract vehicle trips from within the Tertiary Plan's boundaries. The internal assignment of site trips did not further reduce the total net trips generated by the Tertiary Plan, it merely kept a portion of the trips internal to the site instead of 100% of the net trips being assigned to external road network gateways.

In the case of land uses for which internal assignment applied, such as schools, a "catchment area" approach as taken. For example, inbound and outbound internal trips generated by the school were assigned to/from each TAZ in the catchment area proportionate to the number of residential units in each TAZ.

Completing internal assignments should be considered a conservative measure, particularly when it comes to the design of the collector road intersections and assessment of capacity. Internal assignment accounts for trips completed between TAZs (between residential and non-residential land uses), and not just commuter traffic in and out of the Tertiary Plan area. This results in more varied travel patterns throughout the collector road network, ensuring the collector roads and intersections have been designed with sufficient capacity for both internal and external traffic travel patterns.

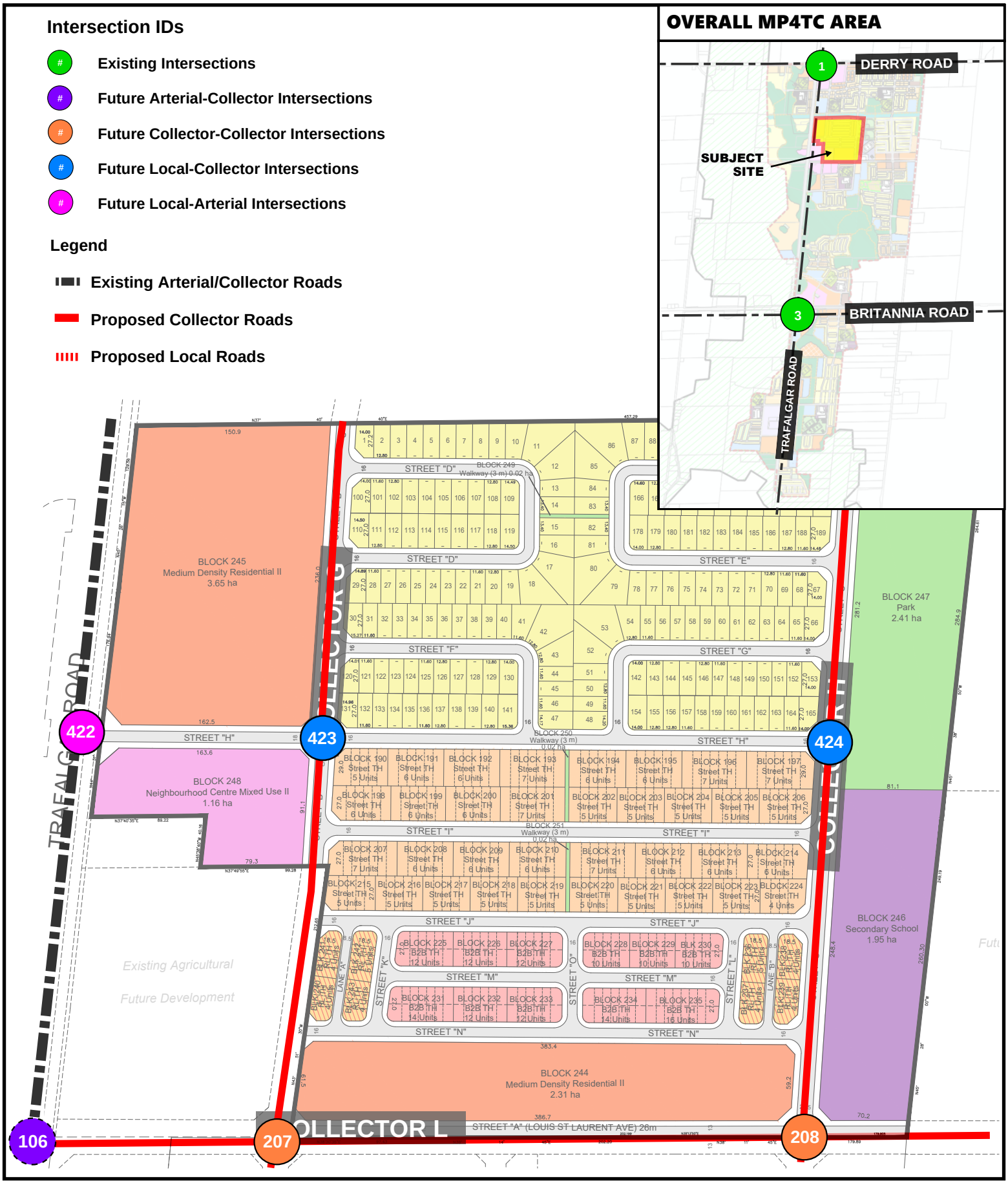


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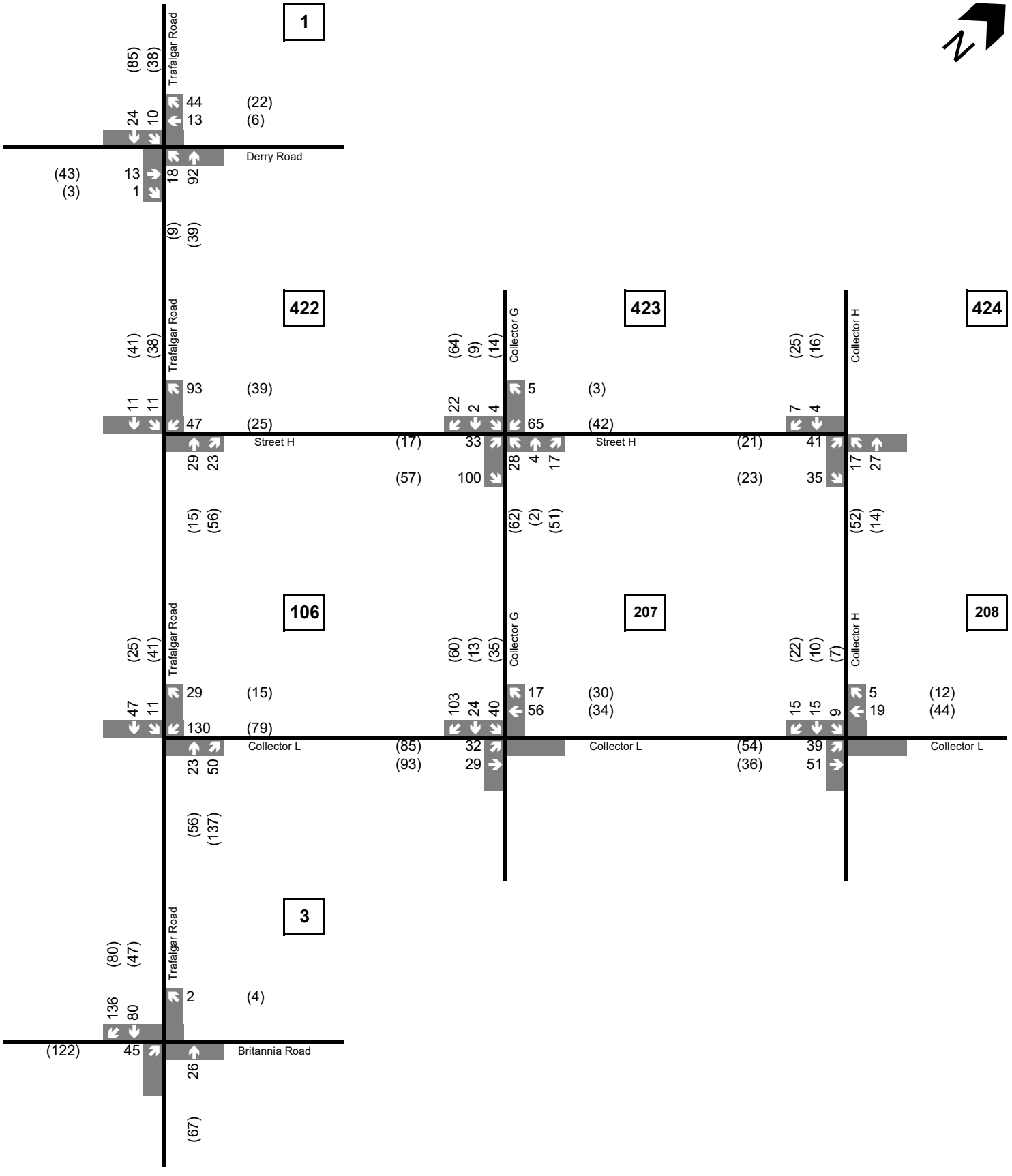
Figure 6-2
Study Intersections Key Map - Future Conditions



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Legend

xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic

Figure 6-3

SiteTraffic Volumes

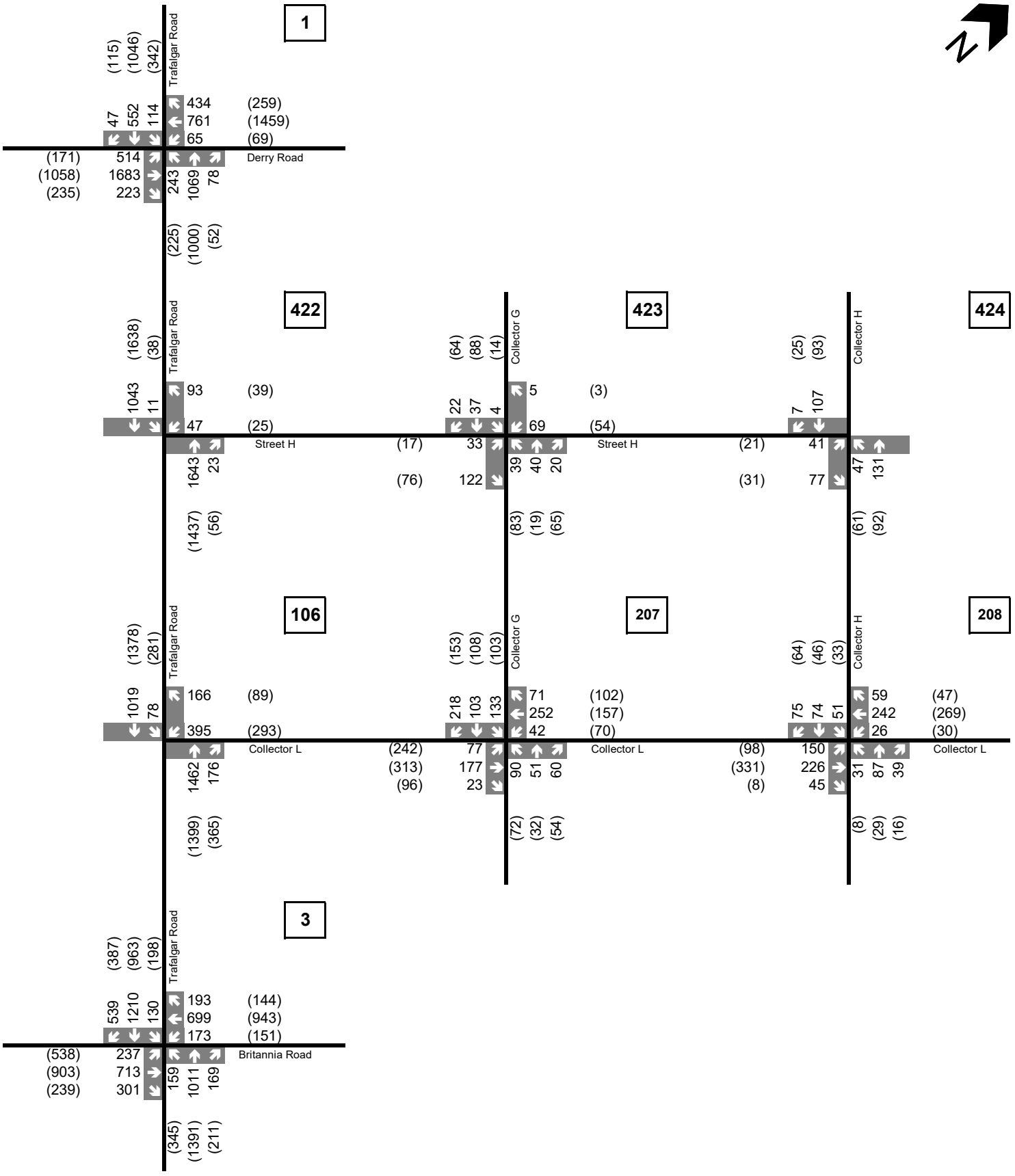
7 FUTURE CONDITIONS

7.1 2031 Future Total

The 2031 future total volumes were developed by combining the 2031 future background volumes with the estimated site generated traffic. The resulting 2031 future total traffic volumes are provided in **Figure 7-1**.

7.2 2041 Future Total

The 2041 future total volumes were developed by combining the 2041 future background volumes with the estimated site generated traffic, Agerton development trips, and the background traffic rerouting adjustments derived from the March 2022 Trafalgar TMP Addendum. The resulting 2041 future total traffic volumes are provided in **Figure 7-2**.



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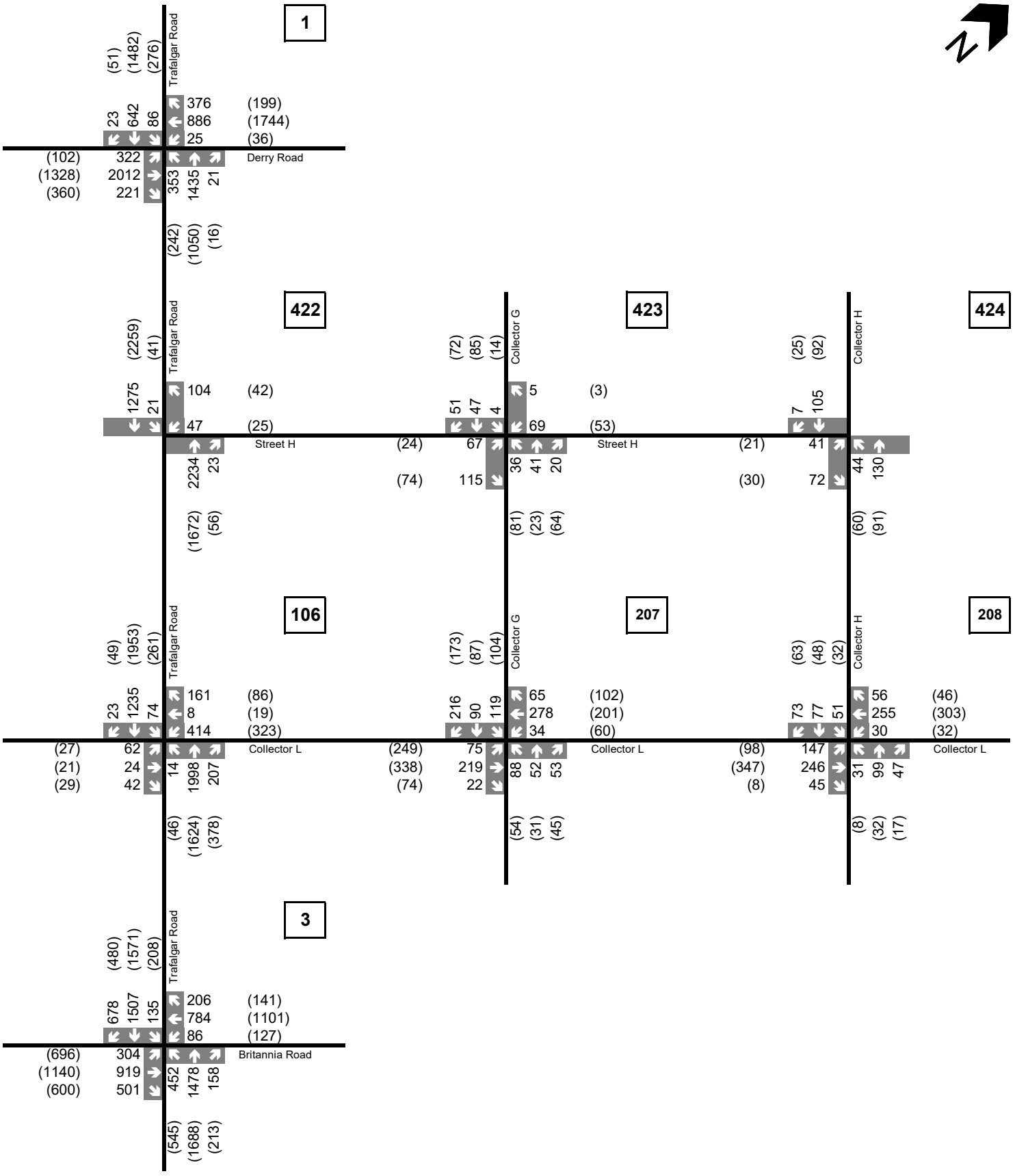
xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic

Figure 7-1

2031 Future Total Traffic Volume



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xx A.M. Peak Hour Traffic
(xx) P.M. Peak Hour Traffic

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Figure 7-2

2041 Future Total Traffic Volume

7.3 Lane Configuration Modifications

Based on the recommendations outlined in the Milton Transportation Master Plan (TMP) and the proposed lane configuration modifications detailed in the RNA for the MP4TC area, phased improvements have been adopted for the study intersections.

For the 2031 horizon year, Phase 1 improvements, including the implementation of a High Occupancy Vehicle (HOV) curb lane on the regional road (Trafalgar Road and Britannia Road), have been incorporated into both the future background and future total scenarios. Detailed improvement and associated responsibility for 2031 scenario are summarized in **Table 7-1** and illustrated in **Figure 7-3**.

Table 7-1 2031 Future Lane Configuration Modification and Responsibility

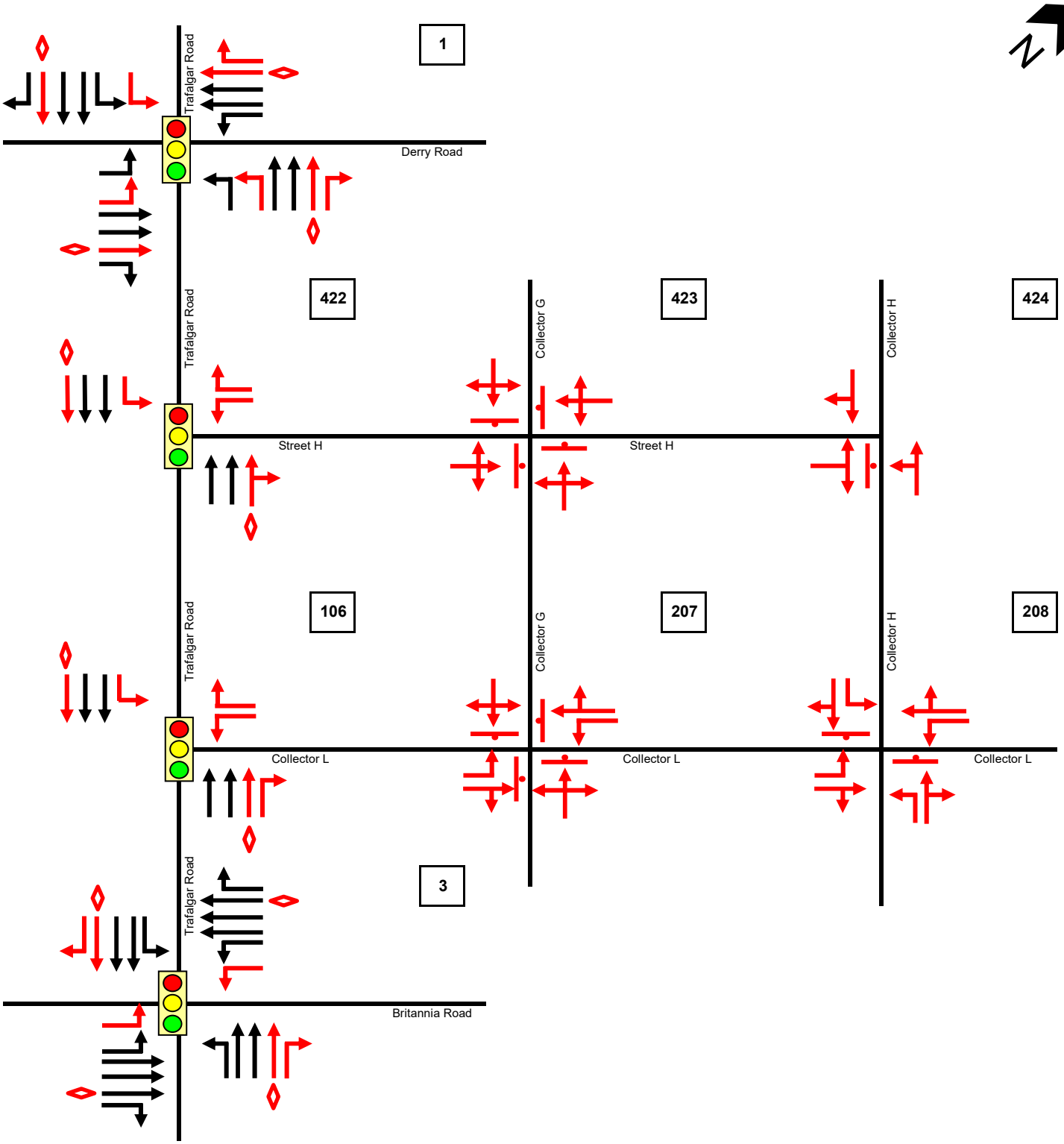
Intersection	Approach	Modification	Responsibility
Existing Intersections			
Trafalgar Road & Derry Road	Northbound	▶ Dual left turn lane ▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	Region
	Eastbound and Southbound	▶ Dual left turn lane ▶ 1 additional through lane (HOV)	
	Westbound	▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	
Trafalgar Road & Britannia Road	Eastbound and Westbound	▶ Dual left turn lane	
	Northbound and Southbound	▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	
Arterial-to-Collector Intersections			
Trafalgar Road & Collector L	Northbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary right turn lane	MP4 Developers
	Southbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary left turn lane	MP4 Developers
	Westbound	▶ Auxiliary left turn lane ▶ Auxiliary right turn lane	MP4 Developers
Arterial-to-Local Road Intersections			
Trafalgar Road &	Northbound	▶ 1 additional through lane (HOV)	Region

Intersection	Approach	Modification	Responsibility
Street H		▶ Shared right turn movement	MP4 Developers
	Southbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary left turn lane	MP4 Developers
	Westbound	▶ Auxiliary left turn lane ▶ Auxiliary right turn lane	MP4 Developers
Collector-to-Collector Intersections			
Collector G & Collector L	Northbound and Southbound	▶ Single lane approach (shared all movements)	MP4 Developers
	Eastbound and Westbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	
Collector H & Collector L	All Direction	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	
Collector-to-Local Road Intersections			
Collector G & Street H	All Direction	▶ Single lane approach (shared all movements)	MP4 Developers
Collector H & Street H	Northbound	▶ 1 shared through/left turn lane	
	Eastbound	▶ 1 shared left/right turn lane	
	Southbound	▶ 1 shared through/right turn lane	

For the 2041 horizon year, the full build-out improvements identified in the MP4TC, along with associated improvements related to the Agerton developments, have been incorporated into both the future background and future total traffic scenarios. The 2041 lane configuration modifications and responsibilities are summarized in **Table 7-2** and illustrated in **Figure 7-4**.

Table 7-2 2041 Future Lane Configuration Modification and Responsibility

Intersection	Approach	Modification	Responsibility
Existing Intersections			
Trafalgar Road & Derry Road	Westbound	▶ Dual left turn lanes	Region
Trafalgar Road & Britannia Road	Northbound and Southbound	▶ Dual left-turn lanes	
Arterial-to-Collector Intersections			
Trafalgar Road & Collector L	Northbound	▶ Auxiliary left turn lane	Town
	Eastbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	MP4 Developers
	Southbound	▶ Auxiliary right turn lane	
	Westbound	▶ Shared through movement	



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Signalized Intersection

Unsignalized Intersection

Lane

Future Improvement

HOV Lane

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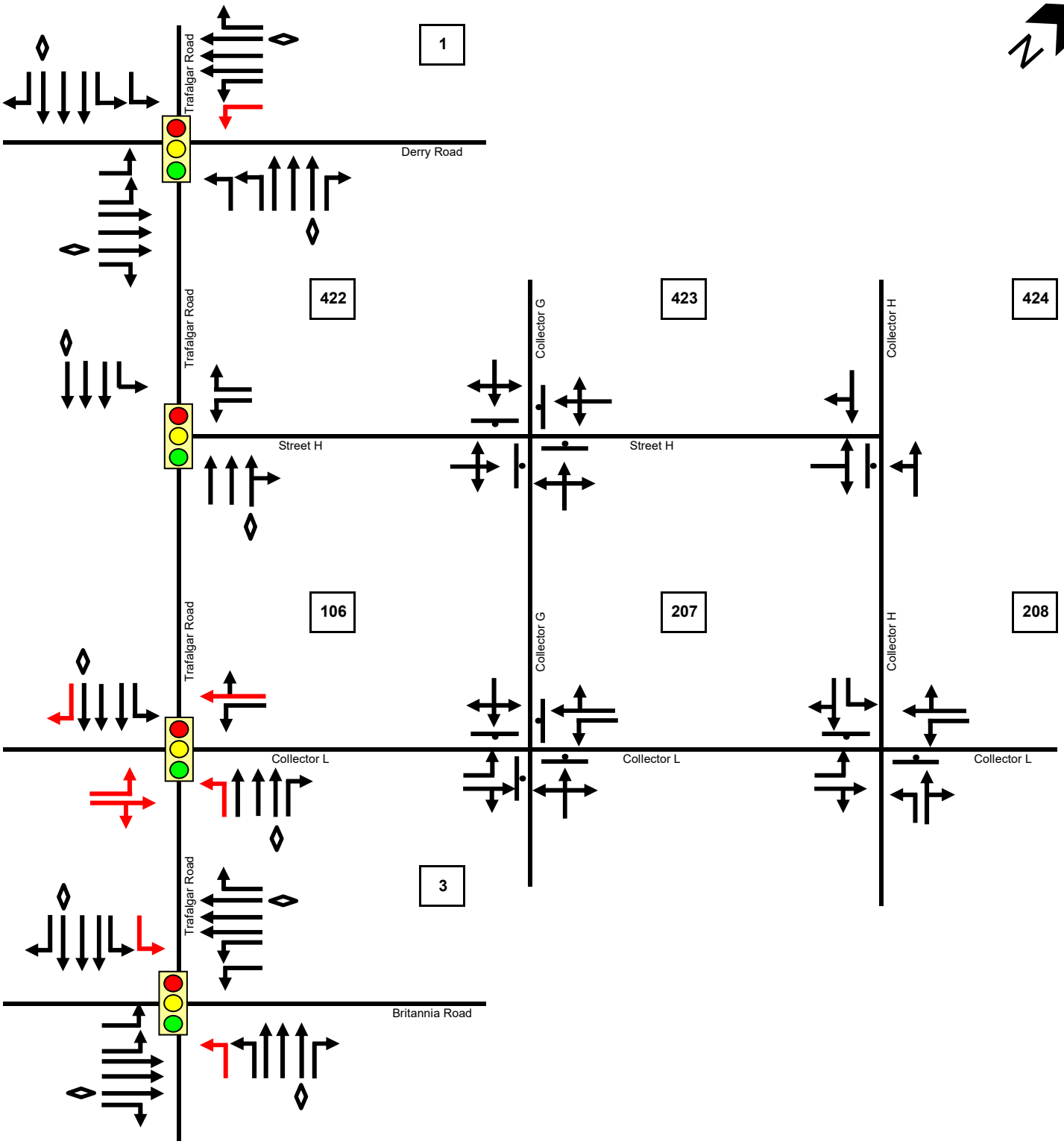
Figure 7-3

2031 Future Lane Configurations



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Signalized Intersection

Unsignalized Intersection

Lane

Future Improvement

HOV Lane

TYLin

Figure 7-4

2041 Future Lane Configurations

8 TRAFFIC CAPACITY ANALYSIS

The capacity analysis identifies how well the existing and proposed intersections are operating and how they are expected to operate in the future. The analysis contained in this report utilized the Highway Capacity Manual (HCM) 2000 techniques 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.

The analysis includes identification of all intersections and for all movements; v/c ratios, LOS indicators and 95th percentile queue lengths. 'Critical' intersections and movements, as defined by Halton Region, include:

Signalized Intersections

- v/c ratios for overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above.
- v/c ratios for exclusive turning movements increased to 0.95 or above; or
- queues for an individual movement are projected to exceed the available turning lane storage.

Unsignalized Intersections

- LOS, based on average delay per vehicle, on individual movements exceeds LOS 'D'; or
- The estimated 95th percentile queue length for an individual movement exceeds the available queue storage.

The following tables summarize the capacity analysis results for the study intersections during the weekday AM and PM peak hours under baseline, future background and future total traffic conditions. Detailed Synchro reports are attached in **Appendix H**, **Appendix I** and **Appendix J** respectively.

8.1 Baseline Conditions

Under baseline 2025 conditions, some assumptions were made based on the signal timing plans (STP) received from the Region. The details of these assumptions and any related modifications are presented in **Table 8-1**. Existing Signal Timing Plans are provided in **Appendix D**. It should be noted that calibrations applied to existing intersections by the Trafalgar TMP (such as lost time adjustments) have also been applied to the analysis to remain consistent with prior analysis efforts of the Trafalgar TMP.

An excerpt of the Trafalgar TMP calibrations is attached in **Appendix D** and summarized below

for each intersection to calibrate the existing baseline conditions:

- **Trafalgar Road and Derry Road**
  1. Assumed to be semi-actuated with minimum recall in Derry Road
  2. Lost time adjustment of -1.0 second for protected/permitted left-turn -movements and -2.0 seconds for through or right-turn movements for both peak hours; and
  3. Phasing splits were optimized for both peak hours.
- **Trafalgar Road and Britannia Road**
  - Lost time adjustment of -1.0 seconds for protected/permitted left-turn movements and -2.0 seconds for through or right-turn movements in the PM peak hour; and
  - Phasing splits were optimized in the peak hour

Existing Peak Hour Factors (PHF) from the TMC data was applied to the baseline analysis.

The capacity results for study intersections during the weekday AM and PM peak hours under baseline traffic conditions are summarized in **Appendix H**.

Table 8-1 Baseline Signal Timing Interpretation and Modifications

Intersection	AM Peak Hour	PM Peak Hour
All	"Max" timings assumed to be maximum split timings and not maximum green time. Max 1 and Max 2 were used for the AM and PM peak periods accordingly.	
	If a vehicle extension was not identified for a particular phase, a default value of 3 seconds was implemented.	
Trafalgar Road & Derry Road	Assumed a 110-second cycle length.	Assumed a 125-second cycle length.
	In order to maintain a cycle length of 110 seconds, the minimum initial times for the left turning phases were changed from 7 seconds to 6 seconds.	–
	–	Added 5 seconds to the total split time for the northbound through phase (phase 8) to have a total split time of 45 seconds.
Trafalgar Road & Britannia Road	Assumed a 104-second cycle length.	Assumed a 130-second cycle length.
	Modified the "Flash don't Walk" times to 26 seconds for NB/SB phases (phases 2 and 6) and 29 seconds for EB/WB phases (phases 4 and 8).	
	Added 4 seconds to the total split time for the southbound through phase (phase 6) to have a total split time of 45 seconds.	–
	–	Added 14 seconds to the total split time for the northbound through

Intersection	AM Peak Hour	PM Peak Hour
		phase (phase 2) to have a total split time of 64 seconds.
	–	Added 15 seconds to the total split time for the westbound through phase (phase 8) to have a total split time of 55 seconds.
	Total split for eastbound movement (phase 4) less than the minimum split warning.	

Table 8-2 Baseline Capacity Analysis Summary

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Trafalgar Road & Derry Road	*Overall*	***0.85***	*34*	*C*	*0.80*	*43*	*D*
	EBL	**1.00**	**57**	**E**	0.78	52	D
	EBT	0.84	30	C	0.46	27	C
	EBR	0.15	17	B	0.07	22	C
	WBL	0.32	23	C	0.21	21	C
	WBTR	0.49	29	C	**0.98**	**58**	**E**
	NBL	0.22	30	C	0.30	26	C
	NBTR	0.60	39	D	0.69	43	D
	SBL	0.20	30	C	0.42	31	C
	SBT	0.39	35	D	0.36	38	D
	SBR	0.05	32	C	0.09	35	C
Trafalgar Road & Britannia Road	*Overall*	*0.54*	*25*	*C*	*0.61*	*28*	*C*
	EBL	0.20	31	C	0.45	45	D
	EBT	0.42	32	C	0.41	40	D
	EBR	0.25	31	C	0.13	39	D
	WBL	0.43	24	C	0.40	30	C
	WBT	0.16	22	C	0.36	30	C
	WBR	0.03	21	C	0.04	28	C
	NBL	0.43	15	B	0.70	19	B
	NBTR	0.60	24	C	0.62	22	C
	SBL	0.26	15	B	0.31	19	B
	SBTR	0.56	24	C	0.45	25	C

Under baseline conditions, all study intersections are generally operating within acceptable delays and capacity during both the weekday AM and PM peak hours.

At the intersection of Trafalgar Road and Derry Road, some critical movements are identified as approaching theoretical capacity (i.e., v/c between 0.85 and 1.00). These include the eastbound left-turn during the AM peak hour and westbound through right movement during the PM peak hour, with v/c ratio of 1.0 and 0.98 respectively.

8.2 2031 Future Background Conditions

In accordance with the MP4TC RNA study, adjustments to the signal timing plans were implemented for the 2031 horizon year to accommodate the additional traffic generated by the MP4 development in the Phase 1 scenario. For analysis purposes, these modifications were incorporated into the future background scenario to address the increased traffic volumes across the MP4TC area. A summary of these adjustments is provided in **Table 8-3**.

Table 8-3 2031 Future Background Signal Timing Assumptions and Modifications

Intersection	AM Peak Hour	PM Peak Hour
All	It is noted that several intersections have additional lanes added under future conditions. Therefore, additional phases have been added to the signal timing plans accordingly.	
Trafalgar Road & Derry Road	Increased cycle length to 140 seconds with optimized splits.	
Trafalgar Road & Britannia Road	Increased cycle length to 140 seconds with optimized splits.	

HOV / Bus lanes are planned for implementation in 2031, contingent upon the widening of Trafalgar Road and Britannia Road to three lanes in each direction. To simulate the impact of the HOV lane in the SYNCHRO model, a lane utilization factor of 0.80 was applied to through movements on these roads.

For 2031 future background scenario, the intersections of Trafalgar Road at Derry Road and Trafalgar Road at Britannia Road were analyzed in SYNCHRO suite using the future lane configurations outlined in **Session 7.3** and **Table 7-1**. The capacity results for study intersections during the weekday AM and PM peak hours are summarized in **Table 8-4**.

Table 8-4 2031 Future Background Capacity Analysis Summary

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Trafalgar Road & Derry Road	*Overall*	*0.78*	*50*	*D*	*0.76*	*43*	*D*
	EBL	0.80	**70**	**E**	0.64	**64**	**E**
	EBT	0.77	30	C	0.51	36	D
	EBR	0.14	35	D	0.15	**90**	**F**
	WBL	0.46	39	D	0.32	19	B
	WBT	0.49	38	D	0.79	33	C
	WBR	0.52	42	D	0.21	26	C
	NBL	0.61	**85**	**F**	0.63	**80**	**F**
	NBT	0.76	49	D	0.80	40	D
	NBR	0.05	**445**	**F**	0.03	38	D
	SBL	0.51	**69**	**E**	0.69	**65**	**E**
	SBT	0.52	46	D	0.72	47	D
	SBR	0.05	40	D	0.08	36	D
Trafalgar Road & Britannia Road	*Overall*	*0.63*	*34*	*C*	***0.86***	*43*	*D*
	EBL	0.57	**62**	**E**	0.76	**63**	**E**
	EBT	0.60	46	D	0.57	38	D
	EBR	0.45	45	D	0.15	32	C
	WBL	0.52	**77**	**E**	0.56	**89**	**F**
	WBT	0.62	40	D	0.78	34	C
	WBR	0.17	42	D	0.09	10	A
	NBL	0.64	43	D	**0.91**	**72**	**E**
	NBT	0.48	12	B	0.79	25	C
	NBR	0.10	1	A	0.19	4	A
	SBL	0.48	23	C	**0.88**	**71**	**E**
	SBT	0.57	30	C	0.72	47	D
	SBR	0.29	35	D	0.19	**96**	**F**

Under 2031 future background conditions, the intersection of Trafalgar Road and Derry Road is projected to operate within capacity. Several movements, including the eastbound right (EBR), northbound left (NBL) and northbound right (NBR), experience high delays (LOS F), though all v/c ratios remain below 1.0.

At Trafalgar Road and Britannia Road, the intersection is projected to operate with reserve capacity. However, the westbound left (WBL) and southbound right (SBR) show LOS F in the PM peak, while the northbound left (NBL) and southbound left (SBL) are approaching critical capacity (v/c 0.91 and 0.88).

8.3 2031 Future Total Conditions

Under the 2031 future total traffic conditions, no additional adjustment was made to the signal timing plans compared to future background scenario.

The capacity results for existing arterial, arterial-to-collector, and collector-to-collector and local-to-arterial/collector intersections during the weekday AM and PM peak hours under 2031 future total traffic conditions are summarized in **Table 8-5**.

Table 8-5 2031 Future Total Capacity Analysis Summary

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Existing Arterial Intersections							
Trafalgar Road & Derry Road	*Overall*	*0.81*	*52*	*D*	*0.79*	*45*	*D*
	EBL	0.80	68	E	0.64	63	E
	EBT	0.78	33	C	0.54	37	D
	EBR	0.14	51	D	0.15	**95**	**F**
	WBL	0.46	39	D	0.34	19	B
	WBT	0.51	37	D	0.80	34	C
	WBR	0.60	42	D	0.23	27	C
	NBL	0.66	**87**	**F**	0.65	**83**	**F**
	NBT	0.82	53	D	0.83	41	D
	NBR	0.05	**445**	**F**	0.03	37	D
	SBL	0.56	70	E	0.77	68	E
	SBT	0.54	46	D	0.78	48	D
	SBR	0.05	40	D	0.08	35	D
Trafalgar Road & Britannia Road	*Overall*	*0.66*	*37*	*D*	*0.90*	*46*	*D*
	EBL	0.65	64	E	**0.90**	73	E
	EBT	0.58	45	D	0.56	37	D
	EBR	0.45	44	D	0.15	31	C
	WBL	0.52	76	E	0.56	**89**	**F**
	WBT	0.63	40	D	0.81	36	D

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	WBR	0.20	41	D	0.09	11	B
	NBL	0.68	54	D	**0.92**	76	E
	NBT	0.50	12	B	0.85	28	C
	NBR	0.10	1	A	0.20	4	A
	SBL	0.50	30	C	**0.88**	67	E
	SBT	0.62	37	D	0.78	55	E
	SBR	0.48	47	D	0.34	**92**	**F**
Arterial-to-Collector Intersection							
Trafalgar Road & Collector L	*Overall*	*0.64*	*22*	*C*	*0.79*	*24*	*C*
	WBL	0.82	59	E	0.81	66	E
	WBR	0.11	39	D	0.06	45	D
	NBT	0.58	22	C	0.58	22	C
	NBR	0.11	32	C	0.23	41	D
	SBL	0.39	19	B	0.76	40	D
	SBT	0.35	4	A	0.43	9	A
Collector-to-Collector Intersections							
Collector G & Collector L	EBL	0.18	12	B	0.52	18	C
	EBTR	0.42	15	C	0.80	31	D
	WBL	0.09	11	B	0.16	12	B
	WBTR	0.65	22	C	0.54	18	C
	NBLTR	0.40	15	C	0.33	14	B
	SBLTR	0.80	30	D	0.69	24	C
Collector H & Collector L	EBL	0.12	8	A	0.08	8	A
	EBTR	0.16	0	A	0.2	0	A
	WBL	0.02	8	A	0.02	8	A
	WBTR	0.18	0	A	0.19	0	A
	NBL	0.21	36	E	0.05	26	D
	NBTR	0.41	25	D	0.14	18	C
	SBL	0.34	40	E	0.16	25	D
	SBTR	0.40	21	C	0.27	17	C
Local-to-Arterial Intersection							
Trafalgar Road & Street H	*Overall*	*0.41*	*7*	*A*	*0.45*	*17*	*B*
	WBL	0.28	60	E	0.04	10	A
	WBR	0.54	64	E	0.06	10	A

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	NBTR	0.40	5	A	0.77	16	B
	SBL	0.06	3	A	0.24	14	B
	SBT	0.25	3	A	0.85	19	B
Local-to-Collector Intersections							
Collector G & Street H	EBLTR	0.17	8	A	0.11	8	A
	WBLTR	0.09	8	A	0.08	8	A
	NBLTR	0.12	8	A	0.20	8	A
	SBLTR	0.08	8	A	0.20	8	A
Collector H & Street H	EBLTR	0.15	10	B	0.06	8	A
	NBLTR	0.03	2	A	0.18	8	A
	SBLTR	0.07	0	A	0.13	8	A

Under 2031 future total conditions, all existing, arterial-to-collector and collector-to-collector, and local-to-arterial/collector intersections are projected to operate within reserve capacity during both AM and PM peak hours, except for the intersection of Trafalgar Road and Britannia Road. While some individual movements experience LOS 'E' or 'F' due to higher delays, they remain within capacity (v/c < 1.00). These delays are partly attributed to the 140-second cycle lengths implemented along regional corridors, which increase delays for dedicated turning movements and minor approach vehicles.

For Trafalgar Road at Britannia Road, consistent with 2031 future background conditions, the intersection is projected to operate with overall reserve capacity. However, critical movements approaching theoretical capacity (v/c between 0.85 and 1.00) include the eastbound left-turn (v/c = 0.90), northbound left-turn (v/c = 0.92), and southbound left-turn (v/c = 0.88) during the PM peak hour, with long delays observed for the westbound left-turn (LOS F) and southbound right-turn (LOS F). This performance is typical for major arterial intersections during peak hours, where operations approach theoretical capacity. Outside peak periods, traffic flow at this intersection is expected to return to manageable levels.

8.4 2041 Future Background Conditions

The previous signal modifications made under the 2031 future conditions were carried over and applied to the 2041 future background conditions.

For 2041 future background scenario, the intersections of Trafalgar Road at Derry Road and Trafalgar Road at Britannia Road were analyzed in SYNCHRO suite using the future lane configurations outlined in **Session 7.3**. The capacity results for study intersections during the

weekday AM and PM peak hours under 2041 future background conditions are summarized in **Table 8-6**.

Table 8-6 2041 Future Background Capacity Analysis Summary

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Trafalgar Road & Derry Road	*Overall*	**0.89**	*43*	*D*	**0.87**	*49*	*D*
	EBL	0.67	80	E	0.50	**88**	**F**
	EBT	**0.97**	34	C	0.66	20	B
	EBR	0.16	20	C	0.33	9	A
	WBL	0.19	71	E	0.22	63	E
	WBT	0.54	42	D	**0.91**	57	E
	WBR	0.41	46	D	0.17	59	E
	NBL	0.69	56	E	**0.92**	**96**	**F**
	NBT	0.85	48	D	0.68	61	E
	NBR	0.01	30	C	0.01	32	C
	SBL	0.38	66	E	0.73	71	E
	SBT	0.51	45	D	**0.88**	50	D
	SBR	0.01	38	D	0.03	31	C
Trafalgar Road & Britannia Road	*Overall*	*0.77*	*43*	*D*	**0.99**	*59*	*E*
	EBL	0.71	67	E	**0.95**	**81**	**F**
	EBT	0.66	44	D	0.67	38	D
	EBR	0.66	47	D	0.74	44	D
	WBL	0.43	47	D	0.63	**88**	**F**
	WBT	0.66	48	D	**0.93**	50	D
	WBR	0.21	49	D	0.08	41	D
	NBL	**0.87**	80	E	**1.14**	**156**	**F**
	NBT	0.68	23	C	**0.88**	29	C
	NBR	0.12	13	B	0.20	13	B
	SBL	0.55	66	E	**0.92**	**109**	**F**
	SBT	0.80	42	D	**1.01**	74	E
	SBR	0.67	41	D	0.36	63	E

Under 2041 future background conditions, the intersection of Trafalgar Road at Derry Road is anticipated to operate with overall reserve capacity during both peak hours. However, eastbound

through (EBT, v/c = 0.97) movement is expected to exceed critical thresholds (v/c between 0.85 and 1.00) during AM peak hour. During the PM peak hour, the westbound through (WBT, v/c = 0.91), northbound left-turn (NBL, v/c = 0.92) and southbound through (SBT, v/c = 0.88) movements operate near or above capacity.

The intersection of Trafalgar Road at Britannia Road is projected to operate with limited reserve capacity, with an overall v/c ratio of 0.99 (LOS E) during the PM peak hour. The northbound left-turn (NBL, v/c = 1.14) and southbound through (SBT, v/c = 1.01) movement are expected to exceed capacity. Some movements are identified approaching critical capacity (v/c between 0.85 and 1.00) include the northbound left-turn (NBL, v/c = 0.87) during AM peak, eastbound left-turn (EBL, v/c = 0.95), westbound through (WBT, v/c = 0.93), northbound through (NBT, v/c = 0.88) and southbound left-turn (SBL, v/c = 0.92) during PM peak.

8.5 2041 Future Total Conditions

Under the 2041 future total traffic conditions, no additional adjustment was made to the signal timing plans compared to 2041 future background scenario.

The capacity results for study intersections during the weekday AM and PM peak hours under 2041 future total traffic conditions are summarized in **Table 8-7**.

Table 8-7 2041 Future Total Capacity Analysis Summary

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Existing Arterial Intersections							
Trafalgar Road & Derry Road	*Overall*	**0.92**	*45*	*D*	**0.89**	*51*	*D*
	EBL	0.67	80	E	0.50	**87**	**F**
	EBT	**0.97**	35	C	0.68	21	C
	EBR	0.16	21	C	0.33	10	B
	WBL	0.19	73	E	0.22	63	E
	WBT	0.55	41	D	**0.91**	57	E
	WBR	0.48	44	D	0.19	58	E
	NBL	0.72	60	E	**0.96**	**103**	**F**
	NBT	**0.90**	52	D	0.71	62	E
	NBR	0.01	30	C	0.01	32	C
	SBL	0.43	67	E	0.84	**82**	**F**
	SBT	0.53	45	D	**0.93**	55	E
	SBR	0.01	38	D	0.03	31	C

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Trafalgar Road & Britannia Road	*Overall*	*0.82*	*45*	*D*	**1.04**	*67*	*E*
	EBL	0.81	74	E	**1.15**	**142**	**F**
	EBT	0.66	44	D	0.67	38	D
	EBR	0.66	47	D	0.74	44	D
	WBL	0.43	47	D	0.63	**88**	**F**
	WBT	0.67	49	D	**0.93**	50	D
	WBR	0.22	49	D	0.09	38	D
	NBL	**0.87**	80	E	**1.14**	**156**	**F**
	NBT	0.69	23	C	**0.92**	31	C
	NBR	0.12	13	B	0.20	14	B
	SBL	0.55	66	E	**0.92**	**108**	**F**
	SBT	0.84	44	D	**1.04**	**85**	**F**
	SBR	**0.88**	56	E	0.50	62	E
Arterial-to-Collector Intersection							
Trafalgar Road & Collector L	*Overall*	**0.86**	*29*	*C*	*0.81*	*29*	*C*
	EBL	0.16	33	C	0.34	66	E
	EBTR	0.06	31	C	0.22	64	E
	WBL	**0.89**	63	E	0.81	57	E
	WBTR	0.17	33	C	0.09	38	D
	NBL	0.08	21	C	0.35	18	B
	NBT	**0.87**	28	C	0.79	25	C
	NBR	0.20	20	C	0.40	23	C
	SBL	0.53	54	D	0.75	49	D
	SBT	0.51	17	B	0.75	25	C
	SBR	0.01	16	B	0.03	13	B
Collector-to-Collector Intersections							
Collector G & Collector L	EBL	0.18	12	B	0.55	19	C
	EBTR	0.53	18	C	0.81	33	D
	WBL	0.08	11	B	0.14	11	B
	WBTR	0.73	27	D	0.62	21	C
	NBLTR	0.41	16	C	0.28	14	B
	SBLTR	**0.86**	41	E	0.70	24	C
Collector H & Collector L	EBL	0.12	8	A	0.08	8	A
	EBTR	0.17	0	A	0.21	0	A

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	WBL	0.02	8	A	0.03	8	A
	WBTR	0.18	0	A	0.21	0	A
	NBL	0.23	39	E	0.05	29	D
	NBTR	0.49	28	D	0.16	19	C
	SBL	0.39	**50**	**F**	0.17	28	D
	SBTR	0.43	23	C	0.29	18	C
Local-to-Arterial Intersection							
Trafalgar Road & Street H	*Overall*	*0.55*	*10*	*A*	*0.62*	*63*	*E*
	WBL	0.18	53	D	0.04	10	A
	WBR	0.45	56	E	0.07	10	A
	NBTR	0.57	11	B	**0.90**	21	C
	SBL	0.25	11	B	0.26	14	B
	SBT	0.32	3	A	**1.17**	**98**	**F**
Local-to-Collector Intersections							
Collector G & Street H	EBLTR	0.21	8	A	0.12	8	A
	WBLTR	0.10	8	A	0.08	8	A
	NBLTR	0.12	8	A	0.20	8	A
	SBLTR	0.12	8	A	0.20	8	A
Collector H & Street H	EBLTR	0.14	10	B	0.06	8	A
	NBLTR	0.03	2	A	0.18	8	A
	SBLTR	0.07	0	A	0.13	8	A

Under 2041 future total conditions, the existing arterial intersections are anticipated to operate at or near critical capacity, while the arterial-to-collector, collector-to-collector, and local-to-arterial/collector intersections are projected to operate within overall reserve capacity during both AM and PM peak hours. Some individual movements are expected to experience LOS 'E' or 'F' due to increased delays, though most movements remain within capacity (v/c < 1.00), except for certain critical movements noted below.

For Trafalgar Road at Derry Road, similar to the 2041 future background scenario, the intersection is expected to operate with overall reserve capacity. However, some movements are approaching or exceeding theoretical capacity (v/c between 0.85 and 1.00), including the eastbound through (EBT, v/c = 0.97) and northbound through (NBT, v/c = 0.90) during the AM peak hour, and the westbound through (WBT, v/c = 0.91), northbound left-turn (NBL, v/c = 0.96) and southbound through (SBT, v/c = 0.93) during the PM peak hour.

For Trafalgar Road at Britannia Road, the intersection is projected to operate above theoretical capacity during the PM peak hour, with an overall v/c ratio of 1.04 (LOS E). Critical movements exceeding capacity includes the eastbound left-turn (EBL, v/c = 1.15), northbound left-turn (NBL, v/c = 1.14), and southbound through (SBT, v/c = 1.04), all operating with LOS F during PM peak.

This performance is typical for the intersections of major arterial roads during peak hours, where high traffic demand leads to operations approaching or exceeding capacity. Outside of peak hours, traffic flow at this intersection is expected to return to more manageable levels.

In additions, the high volume and operation of some critical movements are partly attributed to the inability to fully exclude Trafalgar site traffic from the 2051 JBPE forecasting model growth rates, as requested by the Region. This limitation, due to challenges in aligning trip distribution between traffic models, may have resulted in double-counting some Trafalgar site traffic and consequently overestimating traffic volumes for the 2041 future background and total scenarios.

9 QUEUEING ANALYSIS

As part of the traffic analysis, the 50th and 95th percentile queue lengths were derived from the Synchro HCM queueing reports for the baseline, 2031 & 2041 future background, and 2031 & 2041 future total traffic conditions. The queueing reports were prepared using Synchro version 11 software and full queuing results are attached in **Appendix H**, **Appendix I** and **Appendix J** respectively.

9.1 Existing Baseline Queues

Under Existing conditions, all movements at Trafalgar Road & Derry Road and Trafalgar Road & Britannia Road generally operate within available storage during both AM and PM peak hours. The only exception is the eastbound left-turn at Trafalgar & Derry, where the 95th percentile queue (168 m) slightly exceeds the 110 m storage in the AM peak, but it clears within one signal cycle. No other storage issues are observed, as summarized in **Table 9-1** below.

Table 9-1 Baseline Queueing Analysis

Intersection	Movement	Storage (m)	Weekday AM Peak Hour		Weekday PM Peak Hour	
			50th Percentile Queue (m)	95th Percentile Queue (m)	50th Percentile Queue (m)	95th Percentile Queue (m)
Trafalgar Road & Derry Road	EBL	110	77	**168**	30	76
	EBR	85	4	19	0	9
	WBL	100	6	14	9	18
	NBL	100	10	17	20	31
	SBL	85	7	14	17	28
	SBR	85	0	0	0	11
Trafalgar Road & Britannia Road	EBL	125	7	16	15	29
	EBR	-	5	25	0	19
	WBL	215	17	29	22	35
	WBR	-	0	4	0	5
	NBL	100	12	26	36	68
	SBL	100	7	16	7	16

9.2 2031 Future Background Queues

Under 2031 future background conditions, most exclusive turning movements at the intersections of Trafalgar Road & Derry Road and Trafalgar Road & Britannia Road operate within their available storage lengths during both AM and PM peak hours. The only movement exceeding storage is the westbound right-turn at Trafalgar & Derry Road during the AM peak hour, where the 95th percentile queue (102 m) surpasses the 70 m storage. The queueing results are summarized in **Table 9-2**.

Table 9-2 2031 Future Background Queueing Analysis

Intersection	Movement	Storage (m)	Weekday AM Peak Hour		Weekday PM Peak Hour	
			50th Percentile Queue (m)	95th Percentile Queue (m)	50th Percentile Queue (m)	95th Percentile Queue (m)
Trafalgar Road & Derry Road	EBL	130	79	97	24	37
	EBR	110	0	22	11	33
	WBL	300	9	18	7	12
	WBR	70	63	**102**	17	32
	NBL	110	34	48	26	44
	NBR	70	4	18	1	2
	SBL	130	15	25	42	58
	SBR	85	0	0	0	13
Trafalgar Road & Britannia Road	EBL	125	27	39	58	74
	EBR	85	36	64	0	18
	WBL	90	26	36	23	35
	WBR	70	4	18	1	4
	NBL	165	13	44	52	122
	NBR	70	1	1	3	1
	SBL	140	13	33	43	85
	SBR	140	6	63	8	40

9.3 2031 Future Total Queues

Under 2031 future total traffic conditions, all exclusive turning movements at the study intersections operate within their available storage lengths during both the weekday AM and PM peak hours, except for the westbound left-turn (WBL) at Trafalgar Road & Collector L during the

AM peak hour, where the 95th percentile queue (130 m) slightly exceeds the 110 m storage (by roughly 3–4 vehicles). This exceedance is expected to clear within a cycle and is not considered operationally critical. The queueing results are summarized in **Table 9-3**.

Table 9-3 2031 Future Total Queueing Analysis

Intersection	Movement	Storage (m)	Weekday AM Peak Hour		Weekday PM Peak Hour	
			50th Percentile Queue (m)	95th Percentile Queue (m)	50th Percentile Queue (m)	95th Percentile Queue (m)
Trafalgar Road & Derry Road	EBL	130	79	97	24	37
	EBR	110	2	25	12	35
	WBL	300	9	17	7	13
	WBR	70	52	56	20	37
	NBL	110	37	51	28	47
	NBR	70	4	18	1	1
	SBL	130	17	27	48	65
	SBR	85	0	0	0	13
Trafalgar Road & Britannia Road	EBL	125	33	47	76	105
	EBR	85	36	65	0	18
	WBL	90	26	36	23	35
	WBR	70	5	22	3	4
	NBL	165	19	52	55	126
	NBR	70	1	1	3	1
	SBL	140	16	40	42	82
	SBR	140	58	138	19	58
Trafalgar Road & Collector L	WBL	110	103	**130**	79	103
	WBR	100	1	16	0	14
	NBR	100	3	24	19	43
	SBL	100	4	16	45	76
Trafalgar Road & Street H	WBL	90	13	25	2	5
	WBR	50	22	39	2	6
	SBL	50	1	2	3	8

9.4 2041 Future Background Queues

Under 2041 future background conditions, most turning movements operate within their available storage lengths during peak hours. However, all eastbound right-turn (EBR) queues at Trafalgar Road & Britannia Road exceed the 85 m storage length in both AM and PM peaks, with 95th percentile queues up to 108 m (AM) and 145 m (PM). The queueing results are summarized in **Table 9-** below.

Table 9-4 2041 Future Background Queueing Analysis

Intersection	Movement	Storage (m)	Weekday AM Peak Hour		Weekday PM Peak Hour	
			50th Percentile Queue (m)	95th Percentile Queue (m)	50th Percentile Queue (m)	95th Percentile Queue (m)
Trafalgar Road & Derry Road	EBL	130	44	52	16	22
	EBR	110	5	13	8	17
	WBL	130	4	9	6	9
	WBR	70	32	53	20	38
	NBL	110	40	60	34	59
	NBR	70	0	0	0	2
	SBL	130	11	20	34	49
	SBR	85	0	0	0	2
Trafalgar Road & Britannia Road	EBL	125	37	51	82	117
	EBR	85	64	**108**	**93**	**145**
	WBL	90	13	18	16	31
	WBR	70	22	43	15	10
	NBL	165	68	91	91	125
	NBR	70	2	9	1	13
	SBL	140	19	30	29	55
	SBR	140	85	130	18	59

9.5 2041 Future Total Queues

Under 2041 future total traffic conditions, some turning movements are projected to exceed their available storage capacities at Trafalgar Road & Britannia Road and Trafalgar Road & Collector L:

- Eastbound left-turn (EBL) at Trafalgar Road & Britannia Road: The 95th percentile queue reaches 155 m in the PM peak, exceeding the 125 m storage by approximately 4–5 vehicles.

- Eastbound right-turn (EBR) at Trafalgar Road & Britannia Road: Queues exceed the 85 m storage in both peak periods, reaching 109 m in the AM and 93 m (50th percentile) / 145 m (95th percentile) in the PM, indicating consistent and significant exceedances.
- Southbound right-turn (SBR) at Trafalgar Road & Britannia Road: Queues exceed the 140 m storage in both peak periods, reaching 215 m in the AM and 50 m (50th percentile) / 114 m (95th percentile) in the PM, indicating consistent exceedances.
- Westbound left-turn (WBL) at Trafalgar & Collector L: The 95th percentile queue reaches 143 m in the AM peak, exceeding the 130 m storage by about 2 vehicles.
- Northbound right-turn (NBR) at Trafalgar & Collector L: The 95th percentile queues are 51 m in the AM and 60 m in the PM, which are close to the 50 m storage, exceeding it by about 1–2 vehicles.

Although these exceedances suggest higher queuing pressures, the queues are generally expected to clear within a single signal cycle under most conditions. Continued monitoring by the Region is recommended to ensure intersection performance remains acceptable and to assess if future mitigation measures may be required. All other turning movements at the study intersections operate within their available storage capacities. The queueing results are summarized in **Table 9-5** below.

Table 9-5 2041 Future Total Queueing Analysis

Intersection	Movement	Storage (m)	Weekday AM Peak Hour		Weekday PM Peak Hour	
			50th Percentile Queue (m)	95th Percentile Queue (m)	50th Percentile Queue (m)	95th Percentile Queue (m)
Trafalgar Road & Derry Road	EBL	130	44	51	16	22
	EBR	110	5	13	8	21
	WBL	130	4	8	6	9
	WBR	70	41	62	22	41
	NBL	110	48	69	36	63
	NBR	70	0	0	0	2
	SBL	130	12	21	40	62
	SBR	85	0	0	0	2
Trafalgar Road & Britannia Road	EBL	125	43	64	117	**155**
	EBR	85	65	**109**	**93**	**145**
	WBL	90	13	18	16	31
	WBR	70	23	43	16	10

Intersection	Movement	Storage (m)	Weekday AM Peak Hour		Weekday PM Peak Hour	
			50th Percentile Queue (m)	95th Percentile Queue (m)	50th Percentile Queue (m)	95th Percentile Queue (m)
	NBL	165	68	91	91	125
	NBR	70	2	9	2	13
	SBL	140	19	30	31	54
	SBR	140	137	**215**	50	114
Trafalgar Road & Collector L	EBL	50	12	22	8	18
	WBL	130	107	**143**	77	107
	NBL	50	2	3	3	8
	NBR	50	14	33	**51**	**60**
	SBL	100	10	25	53	82
	SBR	50	0	3	0	0
Trafalgar Road & Street H	WBL	90	12	24	2	5
	WBR	50	27	46	3	7
	SBL	50	1	3	3	9

10 ACTIVE TRANSPORTATION

10.1 Existing Facilities

The following summary of active transportation facilities is based on a review of Halton Region's 2015 Active Transportation Master Plan (ATMP) and current infrastructure conditions within the study area.

10.1.1 Sidewalk / Pedestrian Routes

There are currently no continuous pedestrian facilities (i.e., sidewalks or designated pedestrian pathways) along Britannia Road and Trafalgar Road within the study area limits.

10.1.2 Bicycle Paths and Connectivity

There are no dedicated on-road bicycle lanes or signed cycling routes currently provided along Trafalgar Road within the study area.

For Britannia Road, it has recently been upgraded as an urban 6-lane cross section between Trafalgar Road and Eighth Line within the study area. It has incorporated an on-street bike lane, providing cycling connectivity.

10.1.3 Off-Road Trails

There is no multi-use paths currently provided along Trafalgar Road within the study area.

For Britannia Road, it has recently been upgraded as an urban 6-lane cross section between Trafalgar Road and Eighth Line within the study area. It has incorporated multi-use paths (MUP) on both sides of the road, providing pedestrian and cycling connectivity.

10.2 Proposed Facilities

The proposed active transportation facilities within the site are designed to support internal connectivity for pedestrians and cyclists, while also linking to the broader active transportation network identified in the Trafalgar Tertiary Plan, as discussed in **Section 5.6**.

These facilities are intended to support walking and cycling within the site while ensuring strong connections to the broader transportation network. The proposed active transportation plan within the Hannover lands is summarized in **Table 10-1** and illustrated in **Figure 10-1**, providing a detailed overview of multi-use paths and cycling facilities within the site boundary.

Table 10-1 Proposed Active Transportation Facilities

Road Name	Active Transportation Facilities
Trafalgar Road	▶ multi-use paths (MUPs) on both sides
Collector L (26.0m ROW)	▶ in-boulevard bike lanes and sidewalks on both sides
Collector H (21.5m ROW)	▶ in-boulevard bike lanes and sidewalks on both sides
Collector G (20m ROW)	▶ a MUP on one side and a sidewalk on the other side
Local roads (18m ROW)	▶ sidewalks on both sides of the road
Local roads (16m ROW)	▶ a sidewalk on either side of the road

10.2.1 Pedestrian Arrangement Adjacent to School Area

At this stage, the school layout, including site accesses, has not been finalized. A separate TIS will be required at a later stage for the school site, at which time pedestrian crossing arrangements can be appropriately addressed. It is also noted that while secondary schools generate notable pedestrian activity, less direct supervision is typically required compared to elementary schools.

From a traffic perspective, at the intersection of, the RNA concluded that an all-way stop-controlled (AWSC) at the Collector H at Collector L intersection is not currently warranted, though it may be reserved for future monitoring and consideration. Alternatively, the provision of school crossing guards may be considered consistent with the Ontario Traffic Manual guidance for intersections near schools. To enhance safety, an AWSC operation may be recommended during school Site Plan Application process.

Gas Pipeline Corridor

Existing Agricultural

TRAFALGAR ROAD

STREET "D"

STREET "E"

STREET "B"

STREET "D"

STREET "E"

STREET "C"

Future Park

STREET "F"

STREET "G"

STREET "H"

STREET "H"

Existing Agricultural

Future Development

STREET "I"

STREET "I"

STREET "J"

STREET "J"

LANE "A"

STREET "K"

STREET "M"

STREET "O"

STREET "M"

STREET "L"

LANE "B"

STREET "C"

Future Secondary School

STREET "N"

STREET "N"

STREET "A" (LOUIS ST LAURENT AVE) 26m

LEGEND

MULTI-USE PATH

BIKE LANE

SIDEWALK

G:\Projects\2025\10495 - Hannover - MP4 York Trafalgar Draft Plan\03 Analysis\04 Active Transportation Plan\20250715

TYLin

3381 STEELES AVE E,
Suite 315
Toronto, ON
M2H 3S8
P: 905.738.5700

HANNOVER YORK TRAFALGAR DRAFT PLAN STUDY
ACTIVE TRANSPORTATION PLAN

N.T.S

DRAWING No. 01

DATE JUL 2025

11 PARKING PLAN

11.1 On-Street Parking Plan

A conceptual on-street parking plan is conducted and shown in **Appendix K**.

The on-street parking plan is subject to refinement at the detailed design stage once residential driveways and all utilities are confirmed.

12 CONCLUSTIONS AND RECOMMENDATIONS

The conclusions and recommendations for the analysis associated with the proposed development are as follows:

- A review of the proposed subdivision draft plan design for the Hannover lands based on the requirements on Right of Way (ROW), road bends, intersection spacing, intersection angle and daylight triangle / rounding. It is considered that the design of the roadways is deemed acceptable.

Baseline Traffic Conditions

- All study intersections are generally operating well overall, with acceptable delays and capacity during both the weekday AM and PM peak hours.
- Based on the recommendations outlined in the Milton Transportation Master Plan (TMP) and the proposed lane configuration modifications detailed in the RNA for the MP4TC area, phased improvements have been adopted for the study intersections.

2031 Future Lane Configuration Modification and Responsibility

Intersection	Approach	Modification	Responsibility
Existing Intersections			
Trafalgar Road & Derry Road	Northbound	▶ Dual left turn lane ▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	Region
	Eastbound and Southbound	▶ Dual left turn lane ▶ 1 additional through lane (HOV)	
	Westbound	▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	
Trafalgar Road & Britannia Road	Eastbound and Westbound	▶ Dual left turn lane	
	Northbound and Southbound	▶ 1 additional through lane (HOV) ▶ Auxiliary right turn lane	
Arterial-to-Collector Intersections			
Trafalgar Road & Collector L	Northbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary right turn lane	MP4 Developers
	Southbound	▶ 1 additional through lane (HOV)	Region

Intersection	Approach	Modification	Responsibility
		▶ Auxiliary left turn lane	MP4 Developers
	Westbound	▶ Auxiliary left turn lane ▶ Auxiliary right turn lane	MP4 Developers
Arterial-to-Local Road Intersections			
Trafalgar Road & Street H	Northbound	▶ 1 additional through lane (HOV)	Region
		▶ Shared right turn movement	MP4 Developers
	Southbound	▶ 1 additional through lane (HOV)	Region
		▶ Auxiliary left turn lane	MP4 Developers
	Westbound	▶ Auxiliary left turn lane ▶ Auxiliary right turn lane	MP4 Developers
Collector-to-Collector Intersections			
Collector G & Collector L	Northbound and Southbound	▶ Single lane approach (shared all movements)	MP4 Developers
	Eastbound and Westbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	
Collector H & Collector L	Northbound and Southbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	
	Eastbound and Westbound	▶ Single lane approach (shared all movements)	
Collector-to-Local Road Intersections			
Collector G & Street H	All Direction	▶ Single lane approach (shared all movements)	Town
Collector H & Street H	Northbound	▶ 1 shared through/left turn lane	MP4 Developers
	Eastbound	▶ 1 shared left/right turn lane	
	Southbound	▶ 1 shared through/right turn lane	

2031 Future Background Traffic Conditions

- The intersection of Trafalgar Road and Derry Road is projected to operate within capacity. Several movements experience high delays (LOS F), though all v/c ratios remain below 1.0.
- At Trafalgar Road and Britannia Road, the intersection is projected to operate with reserve capacity.

2031 Future Total Traffic Conditions

- All existing, arterial-to-collector and collector-to-collector, and local-to-arterial/collector intersections are projected to operate within reserve capacity during both AM and PM peak hours, except for the intersection of Trafalgar Road and Britannia Road.
- For Trafalgar Road at Britannia Road, consistent with 2031 future background conditions, the intersection is projected to operate with overall reserve capacity. However, critical movements approach theoretical capacity (v/c between 0.85 and 1.00).
- This performance is typical for major arterial intersections during peak hours, where operations approach theoretical capacity. Outside peak periods, traffic flow at this intersection is expected to return to manageable levels.

2041 Future Lane Configuration Modification and Responsibility

Intersection	Approach	Modification	Responsibility
Existing Intersections			
Trafalgar Road & Derry Road	Westbound	▶ Dual left turn lanes	Region
Trafalgar Road & Britannia Road	Northbound and Southbound	▶ Dual left-turn lanes	
Arterial-to-Collector Intersections			
Trafalgar Road & Collector L	Northbound	▶ Auxiliary left turn lane	MP4 Developers
	Eastbound	▶ Auxiliary left turn lane ▶ 1 shared through/right turn lane	
	Southbound	▶ Auxiliary right turn lane	
	Westbound	▶ Shared through movement	

2041 Future Background Traffic Conditions

- The intersection of Trafalgar Road at Derry Road is anticipated to operate with overall reserve capacity during both peak hours. However, some movement is expected to exceed critical thresholds (v/c between 0.85 and 1.00).
- The intersection of Trafalgar Road at Britannia Road is projected to operate with limited reserve capacity during the PM peak hour. Some movements are identified approaching critical capacity (v/c between 0.85 and 1.00)

2041 Future Total Traffic Conditions

- The existing arterial intersections are anticipated to operate at or near critical capacity, while the arterial-to-collector, collector-to-collector, and local-to-arterial/collector intersections are

projected to operate within overall reserve capacity during both AM and PM peak hours. Some individual movements are expected to experience LOS 'E' or 'F' due to increased delays, though most movements remain within capacity (v/c < 1.00).

- For Trafalgar Road at Derry Road, similar to the 2041 future background scenario, the intersection is expected to operate with overall reserve capacity. However, some movements are approaching or exceeding theoretical capacity (v/c between 0.85 and 1.00).
- For Trafalgar Road at Britannia Road, the intersection is projected to operate above theoretical capacity during the PM peak hour.
- This performance is typical for the intersections of major arterial roads during peak hours, where high traffic demand leads to operations approaching or exceeding capacity. Outside of peak hours, traffic flow at this intersection is expected to return to more manageable levels.
- In additions, the operation of some critical movements is primarily attributed to the inability to exclude Trafalgar site traffic from the 2051 JBPE forecasting model growth rates, as requested by the Region. This limitation stems from challenges in aligning trip distribution between the traffic models, resulting in the double counting of some Trafalgar site traffic. Consequently, this has led to an overestimation of traffic volumes for the 2041 future background and future total scenario.

Appendix A
Terms of Reference

Alex Cheng

From: Michael Dowdall
Sent: Thursday, July 10, 2025 12:17 PM
To: Loro, Darren; Sian.Younan@milton.ca
Cc: Jessica Deng; Baharak Hosseini; Alex Cheng
Subject: RE: Trafalgar Tertiary Plan York Trafalgar Hannover Lands - TIS Terms of Reference

Darren/Sian,

FYI
I updated the subject heading to reflect the correct subject lands as: York Trafalgar Hannover.
Apologies for any confusion.

Regards,

Michael Dowdall
DIRECTOR, TRAFFIC
M +1 437.993.2662
TYLin

From: Michael Dowdall
Sent: Thursday, July 10, 2025 9:21 AM
To: Loro, Darren <Darren.Loro@halton.ca>; Sian.Younan@milton.ca
Cc: Jessica Deng <jessica.deng@tylin.com>; Baharak Hosseini <baharak.hosseini@tylin.com>; Alex Cheng <alex.cheng@tylin.com>
Subject: RE: Trafalgar Tertiary Plan Mattamy Remington lands - TIS Terms of Reference

Darren/Sian,

TYLin has been retained to prepare a Transportation Impact Study (TIS) for the proposed York-Trafalgar Hannover draft plan of subdivision located east of Trafalgar Road, between Derry Road and Britannia Road in the Town of Milton, Halton Region.

The proposed subdivision comprises a mix of residential land uses, including 189 single detached dwellings, 35 street townhouses, 11 back-to-back townhouses, and 8 rear lane townhouses. The development also includes two medium-density residential blocks, one neighbourhood centre mixed-use block, and an elementary school, as shown in the attached preliminary concept plan dated April 22, 2025.

In accordance with the pre-consultation checklist and subsequent discussions with Town and Regional staff, the following components are to be addressed and consolidated into one comprehensive submission titled “Transportation Impact Study”:

- Traffic Impact Study
- Active Transportation and Pedestrian Routing Plan
- Parking Justification Report - On-Street Parking Plan

In order to properly scope this project, we ask that the Town & Region provide comments on the following terms of reference and confirm if there are any additional items required as part of the study.

Terms of Reference

1) The Study shall be prepared in accordance with Town of Milton and Halton Region's Transportation Impact Study Guidelines.
2) Conduct a study area road inventory review to confirm lane assignments, traffic controls, speed limits, and surrounding land uses and general study area characteristics. The proposed study intersections consist of:

- Trafalgar Road and Derry Road
- Trafalgar Road and Britannia Road
- Trafalgar Road and Street 'H'
- Trafalgar Road and Street 'A' (Louis St Laurent Avenue)
- Street 'A' (Louis St Laurent Avenue) and Street 'B'
- Street 'A' (Louis St Laurent Avenue) and Street 'C'
- Street 'H' and Street 'B'
- Street 'H' and Street 'C'

3) Develop future background traffic estimates for any nearby and relevant developments in the immediate vicinity of the subject site. This will include our experience working on the Trafalgar RNA. Background traffic growth rates within the Study Area will also be extracted from the Trafalgar RNA as part of this study. Additionally, the Trafalgar Teritary Plan Phase 1 and Phase 2 site traffic will be included as part of the background traffic estimates.
4) Obtain any available information relating to potential/committed future road / intersection / other transportation infrastructure improvements in the vicinity of the subject site, beyond those proposed in the Trafalgar RNA, that could impact local traffic distribution or assignments. Their effects on traffic patterns will be accounted for in the appropriate planning horizon as specified by Town/Regional staff.
5) As per Town and Regional guidelines, traffic analyses will include the year of anticipated full occupancy year (full build-out) plus a five-year horizon year analysis. The proposed 2031 (build-out) and 2041 horizon years have been selected to remain consistent with the Trafalgar RNA.
6) Remove and replace the estimated site traffic volumes assumed in the Trafalgar RNA as per updated subdivision statistics. As such, the estimated site generated traffic will be built upon the forecasted traffic volumes provided by the Trafalgar RNA study, which in turn will become our future traffic base model. Ensure that all assumptions and methodologies are well documented within the report including supporting diagrams, excerpts, and detailed text with justification.
7) Estimate the weekday a.m. and p.m. peak period traffic to be generated by the proposed development using the industry-accepted, and agency-preferred data published in the Institute of Transportation Engineers, Trip Generation (11th Edition). The directional distribution of traffic approaching and departing the site will be based upon the distribution derived as part of the Trafalgar..
8) Create a future conditions traffic operations model to assess the traffic impacts of the proposed development after introducing the estimated site generated traffic into the future background traffic model. Report any operational deficiencies and recommend mitigating measures, if necessary, to improve traffic operations, including recommending lane configuration changes, and/or traffic control alterations.
9) Prepare peak-hour operational analyses to investigate and document the impacts of the proposed development on the site accesses and study area intersections using Synchro (an industry-accepted analysis software). This will include a review of turning movement delays, volume-to-capacity ratios, and vehicular queuing. Input parameters to the Synchro software will be consistent with the recommended municipal practices and guidelines.
10) Based on the results of the traffic analyses, recommend any improvements to the study area roadway system and traffic controls, as necessary, to accommodate future traffic volumes (be they triggered by background and/or site related trips).
11) A comparison of trip generation assumptions provided in the Trafalgar RNA and the currently proposed draft plan will be provided.

Thank you in advance for your attention to this matter. We look forward to your comments on the preceding scope of work and the requested information.

Regards,

Michael Dowdall
DIRECTOR, TRAFFIC
M +1 437.993.2662
TYLin

Appendix B
Site Plan

SK-1

DRAFT PLAN OF SUBDIVISION
FILE 24T -

PART OF LOT 9
CONCESSION 8, NEW SURVEY

(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)
TOWN OF MILTON
REGIONAL MUNICIPALITY OF HALTON

KEY MAP N.T.S.

SUBJECT PROPERTY

OWNER'S AUTHORIZATION

I HEREBY AUTHORIZE KORSIAK URBAN PLANNING TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF MILTON FOR APPROVAL.

SIGNED _____ DATE _____

York Gruehl
HORNBY LAND JOINT VENTURE
1039 FOURTH LINE
MILTON, ON L9T 6P9

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 _____ DATE May 12, 2025

Ross DenBroeder, Ontario Land Surveyor

R-PE Surveying LTD.
ONTARIO LAND SURVEYORS
643 CHRISLEA ROAD, SUITE 7, WOODBRIDGE, ONTARIO L4L 8A3
Tel (416)635-5000 Fax (416)635-5001

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

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

LAND USE SCHEDULE

Land Use	Lots/Blocks	Block Total	Area (ha)	Units
Single Detached	1-189	189	7.05	189
Street Townhouse (TH) (6.7m)	190-224	35	4.05	199
B2B Townhouse (B2B) (6.4m)	225-235	11	1.28	134
Rear Lane Townhouses (RL) (6.4m)	236-243	8	0.50	34
Medium Density Residential II	244, 245	2	5.96	
Secondary School	246	1	1.95	
Park	247	1	2.41	
Neighbourhood Centre Mixed Use II	248	1	1.16	
Walkway Block	249-251	3	0.06	
8.5m ROW (141 m)			0.12	
16m ROW (3,103 m)			5.06	
18m ROW (163 m)			0.32	
20m ROW (345 m)			0.69	
21.5m ROW (540 m)			1.17	
26m ROW (484 m)			0.63	
Total	251	251	32.41	556

DATE	REVISION	DWG	BY
May 21, 2025	First Submission	A	WS

NOTES:

* Local/Local corner radii = 5m
* Local/Collector daylight triangle = 7.5m
* Collector/Collector daylight triangle = 10m
* Collector/Regional Road daylight triangle = 15m
* Pavement illustration is diagrammatic

SDE CALCULATIONS

Unit Type	Blocks	Units	SDE*
Single Detached	1-189	189	189.0
Street Townhouse	190-224	199	161.2
Back-to-Back Townhouse	225-235	134	65.7
Rear-Lane Townhouse	236-243	34	27.5
Totals		556	443.39

* SDE Factors:
Single Detached - 1.00
Townhouse - 0.81
Back-to-Back Townhouse - 0.49
Rear-Lane Townhouse - 0.81

YORK TRAFALGAR

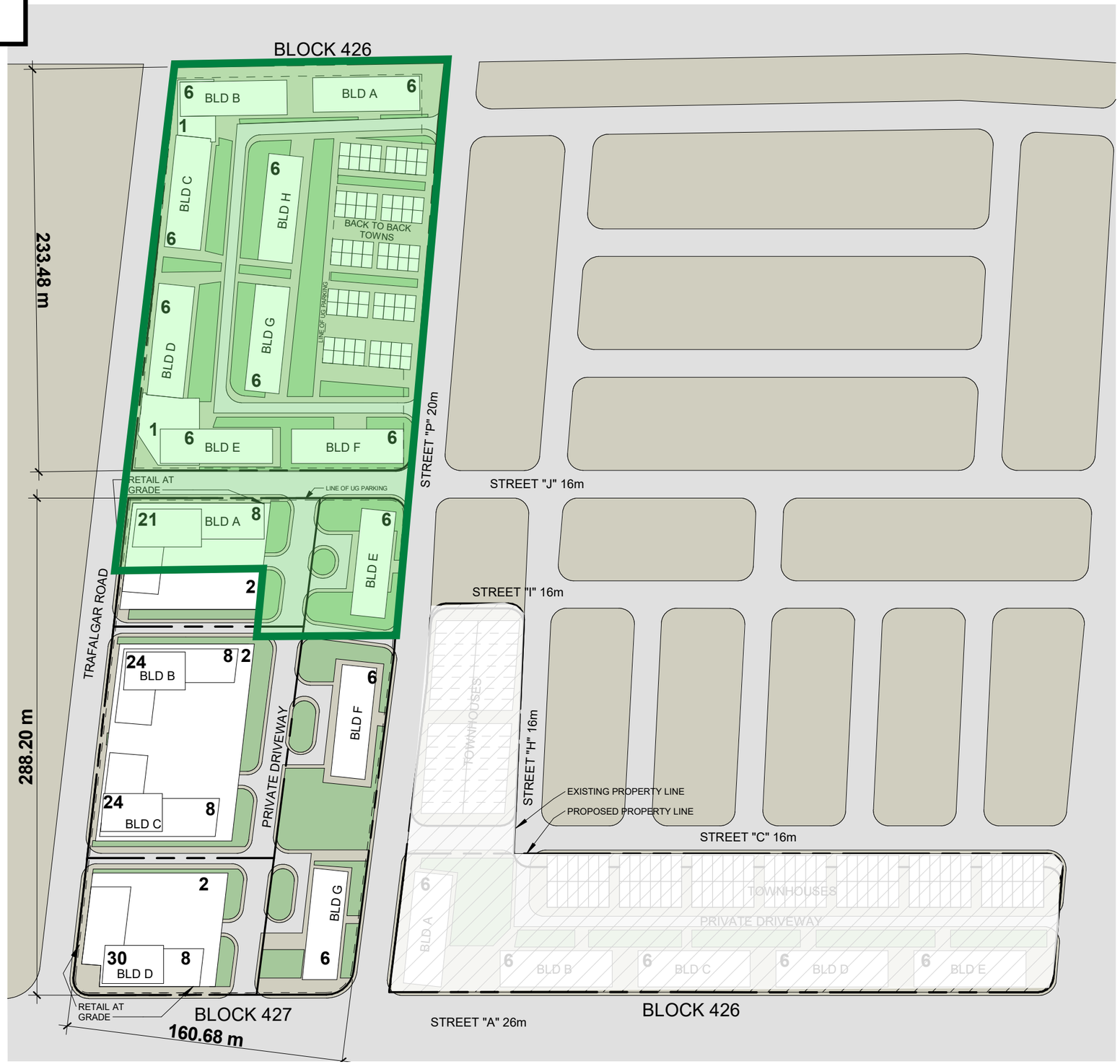
SCALE 1:1500 May 21, 2025 A

DRAWN BY: JH CHECKED BY: KC

KORSIAK Urban Planning

S:\Korsiak & Company\YORK TRAFALGAR\Hannover\Draft Plan\2025-05\Hannover - Draft Plan - May-21-25 - ws.dwg

SK-2



TWO

MASTER PLAN
OPTION 2

VanMar DEVELOPMENTS

YORK TRAFALGAR

MILTON, ON

KIRKOR ARCHITECTS AND PLANNERS

22-166

NOVEMBER 2022

SK-3

PROJECT STATISTICS

Hannover Master Plan

Milton, ON

November 24, 2022 Project No. 22-166

1.0 SITE AREA

	Block	hectare	acres	sq.m.	sq.ft.
1.1	426 - North	3.86	9.54	38,600	415,487
1.2	427	4.69	11.59	46,888	504,698

2.0 Stats - Block 426 - North

2.1 Parking Area

	floors	sq.m.	sq.m.	sq.ft.
Level P1	1 x	27000	27000	290626
Total Proposed Parking GFA			**27000**	**290626**

2.1 Proposed Building Areas	sq.m.	sq.ft.
BLD A	6900	74271
BLD B	6900	74271
BLD C	6900	74271
BLD D	6900	74271
BLD E	6900	74271
BLD F	6900	74271
BLD G	6900	74271
BLD H	6900	74271
Town Houses	10500	113021
Total Proposed Area	**55200**	**594168**

2.2 **Proposed Density - FSI**

Total Proposed FSI	**1.43**

2.2 Proposed Unit Count	
BLD A	90
BLD B	90
BLD C	90
BLD D	90
BLD E	90
BLD F	90
BLD G	90
BLD H	90
Back to Back Towns	120
Total Proposed Units	**840**

2.3 **Parking**

Parking Rate	@	0.80	Cars per unit	**672**

Parking Proposed	floors			
Levels P1	1 x		700	**700**
Total				**700**

3.0 Stats - Block 427

3.1 Parking Area

	floors	sq.m.	sq.m.	sq.ft.
BLD A-G				
Level P1	1 x	45862	45862	493654
BLD A-D	floors	sq.m.	sq.m.	sq.ft.
Level L1-2	2 x	7000	14000	150695
Total Proposed Parking GFA			**59862**	**644349**

3.2 Proposed Building Areas		sq.m.	sq.ft.
BLD A	at 700 Gross Average per Unit	**21468**	**231000**
BLD B	at 700 Gross Average per Unit	**24071**	**259000**
BLD C	at 700 Gross Average per Unit	**24071**	**259000**
BLD D	at 700 Gross Average per Unit	**26022**	**280000**
BLD E		**6900**	**74271**
BLD F		**6900**	**74271**
BLD G		**6900**	**74271**
Total Proposed Area		**116332**	**1251813**

3.3 **Proposed Density - FSI**

Total Proposed FSI	**2.48**

3.3 Proposed Unit Count	
BLD A	330
BLD B	370
BLD C	370
BLD D	400
BLD E	90
BLD F	90
BLD G	90
Total Proposed Units	**1740**

3.4 **Parking**

Parking Rate	@	0.80	Cars per unit	**1392**

Parking Proposed	floors			
Levels P1	1 x		1550	**1550**
Total				**1550**

TWO

STATS - OPTION 2

VanMar DEVELOPMENTS

YORK TRAFALGAR

MILTON, ON

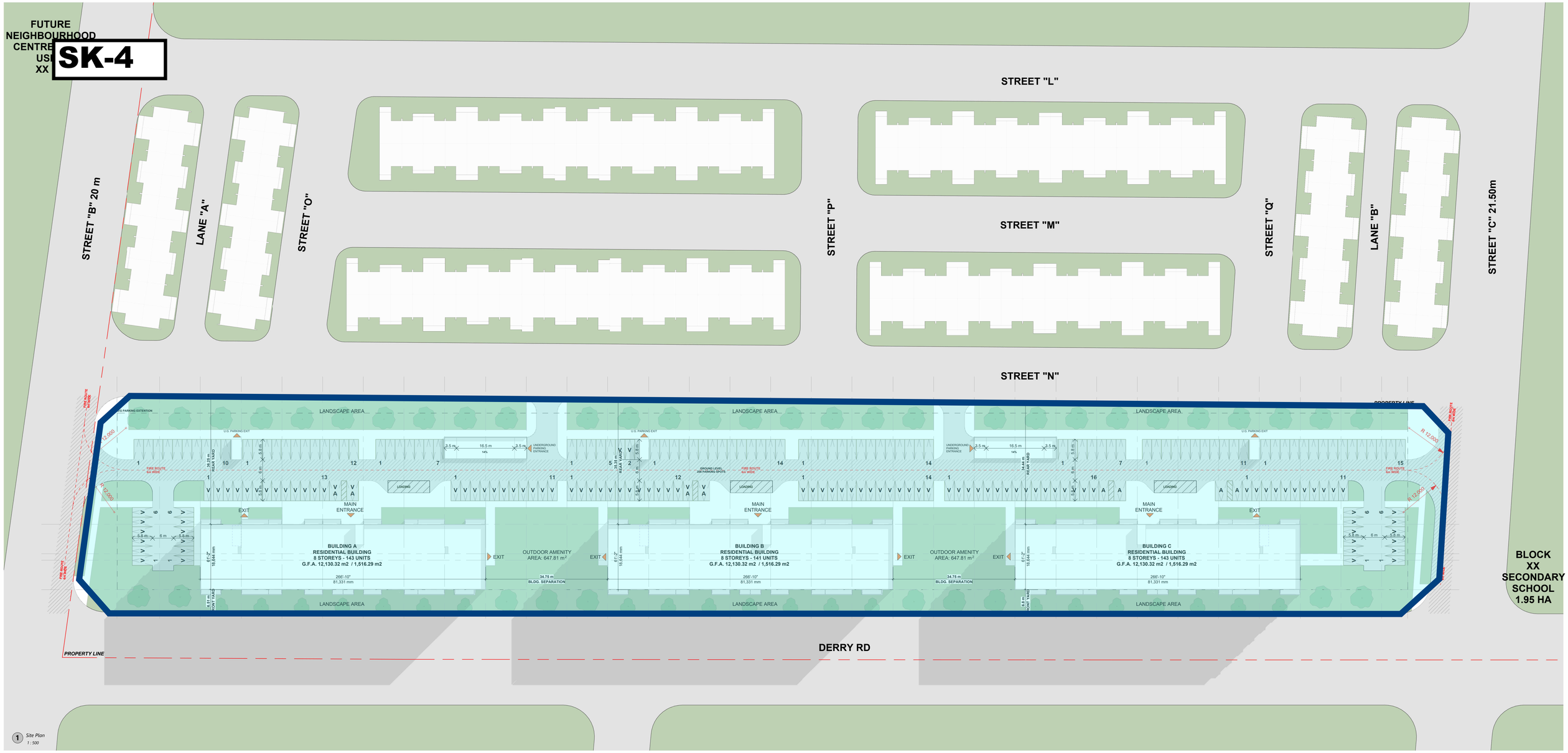
KIRKOR ARCHITECTS AND PLANNERS

22-166

NOVEMBER 2022

FUTURE NEIGHBOURHOOD CENTRE
USE
XX

SK-4



1 *Site Plan*
1 : 500

SITE INFORMATION - CITY OF WOODSTOCK

CURRENT ZONING : FD (FUTURE DEVELOPMENT)
PROPOSED ZONING: RMD II (RESIDENTIAL MEDIUM DENSITY II)

General Provision Density - Residential Units	~~0~~ N/A	427 184.84 units/Hectare	✓
General Provision Property Area	~~0 m²~~ N/A	23113.87 m² 24.13 m² per dwelling unit	✓
Zoning Bylaw - 016-2014 - Section 6 Lot Frontage	54 m *min*	367.38 m	✓
Zoning Bylaw - 016-2014 - Section 6 Building Height - Number of Storeys	4 *max*	8	✗
Zoning Bylaw - 016-2014 - Section 6 Front Yard Setback - Derry Rd	6 m *min*	6.5 m	✓
Zoning Bylaw - 016-2014 - Section 6 Exterior Side Yard Setback	6 m *min*	36.1 m	✓
Zoning Bylaw - 016-2014 - Section 6 Rear Yard Setback	22.5 m *min*	33.83 m	✓
Zoning Bylaw - 016-2014 - Section 6 Lot Coverage	~~0%~~ N/A	20%	✓

Zoning Bylaw - 016-2014 - Section 6 Landscape Open Space	35% *min*	48%	✓
Landscape Open Space Breakdown			
Hardscape (Sidewalk Area) = **3003.65 m² (35%) Provided**			
Softscape (Green Area) = **8161.73 m² (13%) Provided**			
Total Landscape Open Space = **11165.37 m² (48%) Provided**			
Zoning Bylaw - 016-2014 - Section 6 Amenity Area	~~0 m²~~ N/A	5320.67 m² 12.48 m² per dwelling unit	✓
Amenity Area Breakdown			
Balconies (Bldg. A+B+C) = **3332.83 m²**			
Total Indoor Amenity = **692.22 m²**			
Total Outdoor Amenity = **1295.62 m²**			
Total Amenity Area = 5320.67 m² (23%) Provided			
Zoning Bylaw - 016-2014 - Section 5 Residenial Parking requirement	1.5 *min*	1.5	✓
Residential Parking Count Breakdown			
Total units = **427** x 1.5 = **641** Parking Spots **Required**			
Total units = **427** x 1.5 = **641** Parking Spots **Provided**			

Zoning Bylaw - 016-2014 - Section 5 Visitor Parking - 1/10 Req. Parking Spaces	0.25 *min*	0.25	✓
Visitor Parking Count Breakdown			
Total Parking = **427** x 0.25 = **107** Parking Spots **Required**			
Total units = **427** x 0.25 = **107** Parking Spots **Provided**			
Zoning Bylaw - 016-2014 - Section 5 Accessible Parking Requirements	17 *min*	17	✓

PARKING INFORMATION

Type	Required	Provided	Location Surface	Location Garage
ACCESSIBLE WITH AISLE	13	13	4	9
STANDARD	628	628	95	533
RESIDENTIAL	641	641	99	542
ACCESSIBLE WITH AISLE	4	4	4	0
STANDARD	103	103	103	0
VISITOR	107	107	107	0
TOTAL SITE PARKING	748	748	206	542

BUILDING EFFICIENCY

Zone Type	Area (sqft)	Ratio
BUILDING A		
Common	19,442	5%
Non-Residential	7,097	2%
Residential	103,923	27%
	130,462	
BUILDING B		
Common	21,314	5%
Non-Residential	7,163	2%
Residential	102,001	26%
	130,478	
BUILDING C		
Common	19,442	5%
Non-Residential	7,097	2%
Residential	103,923	27%
	130,462	
GRAND TOTAL	391,402	

UNIT CALCULATIONS

Name	Count	Ratio	Average (sqft)
BUILDING A			BUILDING A
ONE BED	23	5%	550
ONE BED PLUS	90	21%	693
TWO BED	23	5%	949
TWO BED PLUS	7	2%	1,048
	143		
BUILDING B			BUILDING B
ONE BED	23	5%	551
ONE BED PLUS	90	21%	693
TWO BED	21	5%	947
TWO BED PLUS	7	2%	1,048
	141		
BUILDING C			BUILDING C
ONE BED	23	5%	550
ONE BED PLUS	90	21%	693
TWO BED	23	5%	949
TWO BED PLUS	7	2%	1,048
	143		
GRAND TOTAL	427		

UNIT TYPE BREAKDOWN - TOTAL PER BUILDING

Name	Unit Area	Count	Total Area (sqft)	Count Ratio
BUILDING A				
ONE BED	524 SF	16	8,382	4%
ONE BED	588 SF	1	588	0%
ONE BED	604 SF	6	3,621	1%
ONE BED PLUS	662 SF	16	10,599	4%
ONE BED PLUS	695 SF	44	30,587	10%
ONE BED PLUS	705 SF	30	21,156	7%
TWO BED	879 SF	15	13,181	4%
TWO BED	1,059 SF	8	8,474	2%
TWO BED PLUS	1,048 SF	7	7,334	2%
BUILDING A: 143		143	103,923	33%
BUILDING B				
ONE BED	524 SF	16	8,382	4%
ONE BED	604 SF	7	4,225	2%
ONE BED PLUS	662 SF	16	10,599	4%
ONE BED PLUS	695 SF	44	30,587	10%
ONE BED PLUS	705 SF	30	21,156	7%
TWO BED	879 SF	14	12,303	3%
TWO BED	1,059 SF	7	7,415	2%
TWO BED PLUS	1,048 SF	7	7,334	2%
BUILDING B: 141		141	102,001	33%

UNIT TYPE BREAKDOWN - TOTAL PER BUILDING

Name	Unit Area	Count	Total Area (sqft)	Count Ratio
BUILDING C				
ONE BED	524 SF	16	8,382	4%
ONE BED	588 SF	1	588	0%
ONE BED	604 SF	6	3,621	1%
ONE BED PLUS	662 SF	16	10,599	4%
ONE BED PLUS	695 SF	44	30,587	10%
ONE BED PLUS	705 SF	30	21,156	7%
TWO BED	879 SF	15	13,181	4%
TWO BED	1,059 SF	8	8,474	2%
TWO BED PLUS	1,048 SF	7	7,334	2%
BUILDING C: 143		143	103,923	33%
Grand Total:		427	309,846	100%

FastTrack BY STUBBE'S

ADDRESS
DERRY ROAD, MILTON, ON.

PROJECT CODE
0037

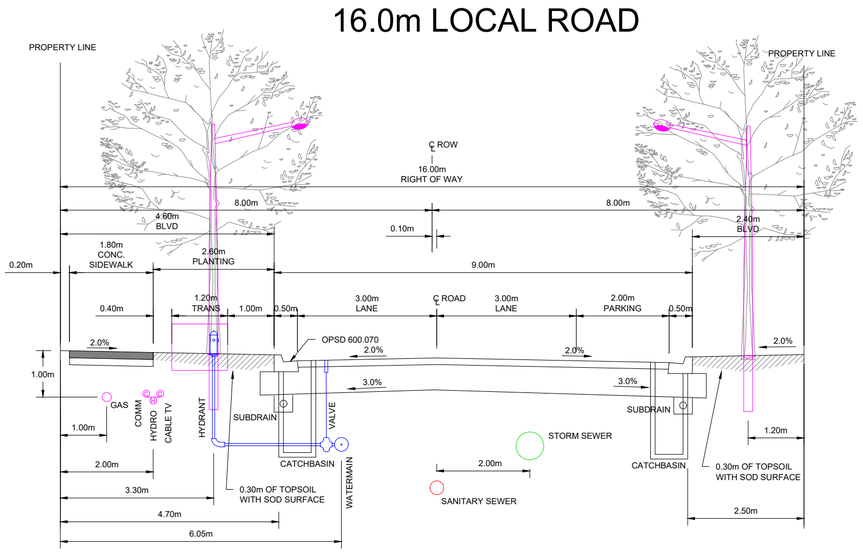
SITE PLAN
NEIGHBORHOOD CENTRE

NORTH

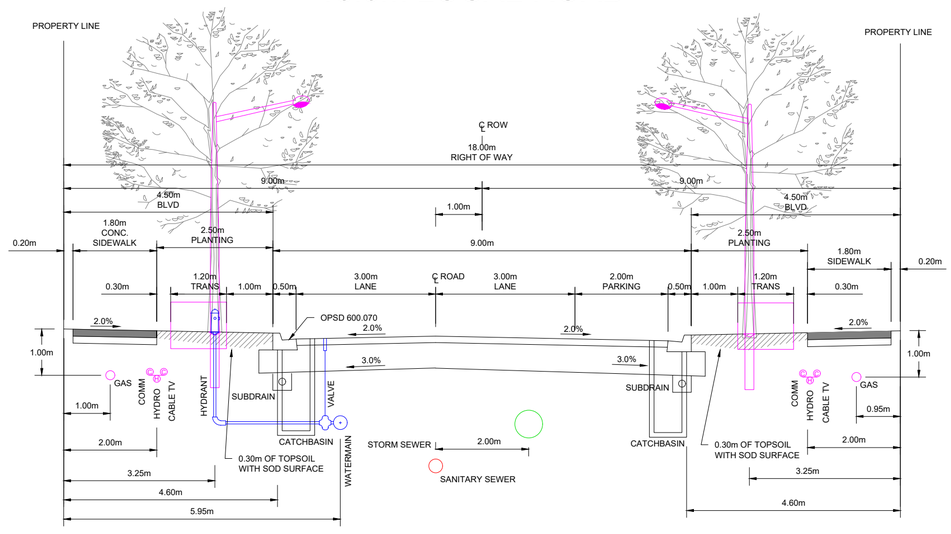
BIM STUDIO
DESIGN + VIRTUAL BUILD
bim@bimstudio.ca - 647 309 7543
636 King St W, 3rd Floor,Toronto ON, M6V 1M3

Appendix C
ROW Cross Section

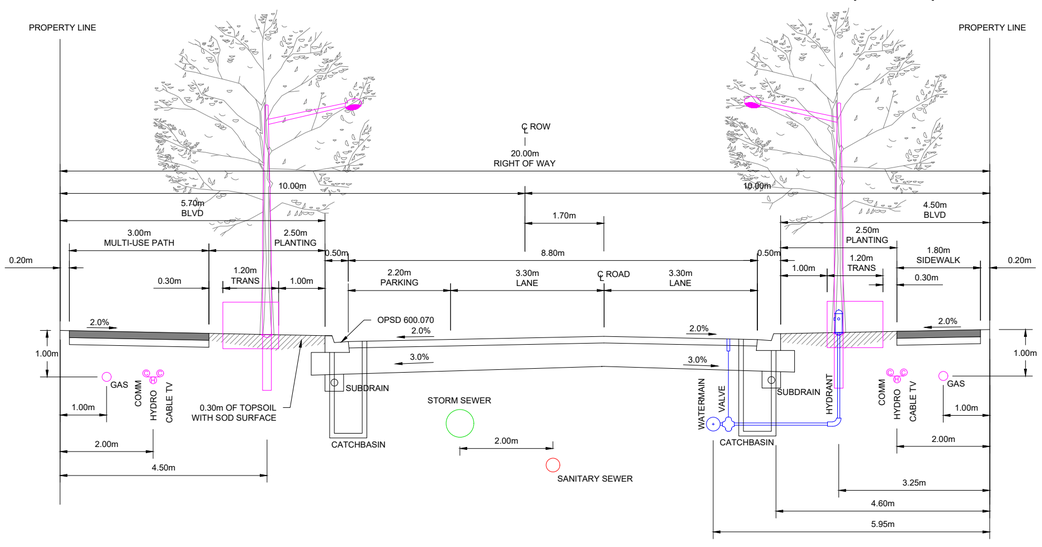
16.0m LOCAL ROAD



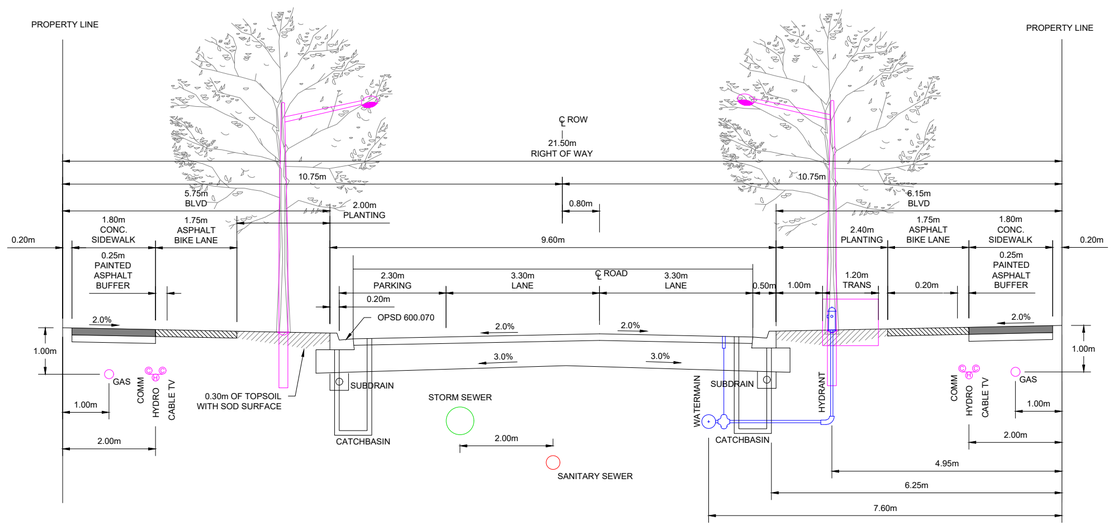
18.0m LOCAL ROAD



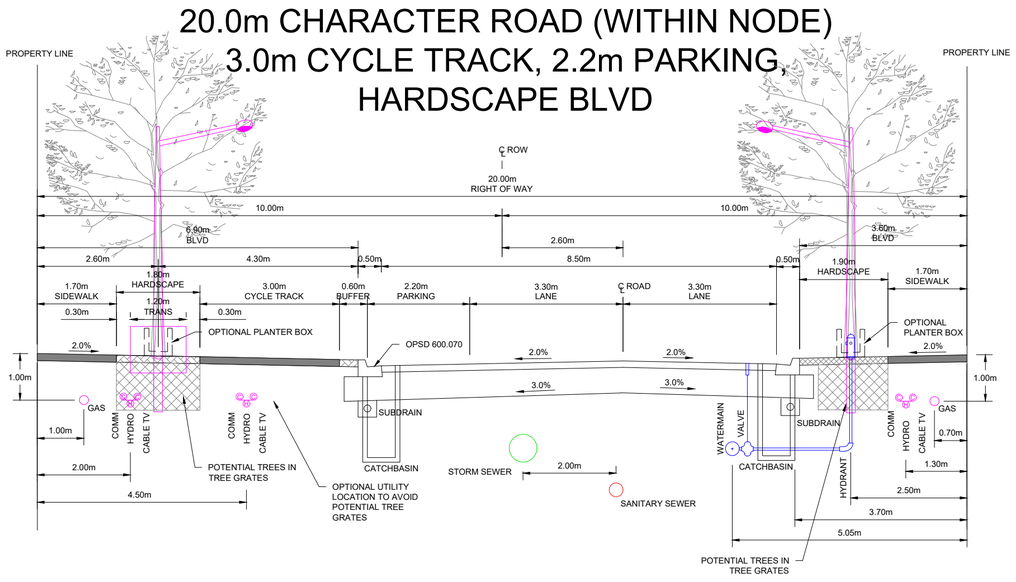
20m COLLECTOR ROAD WITH MULTI-USE PATH (MUP)



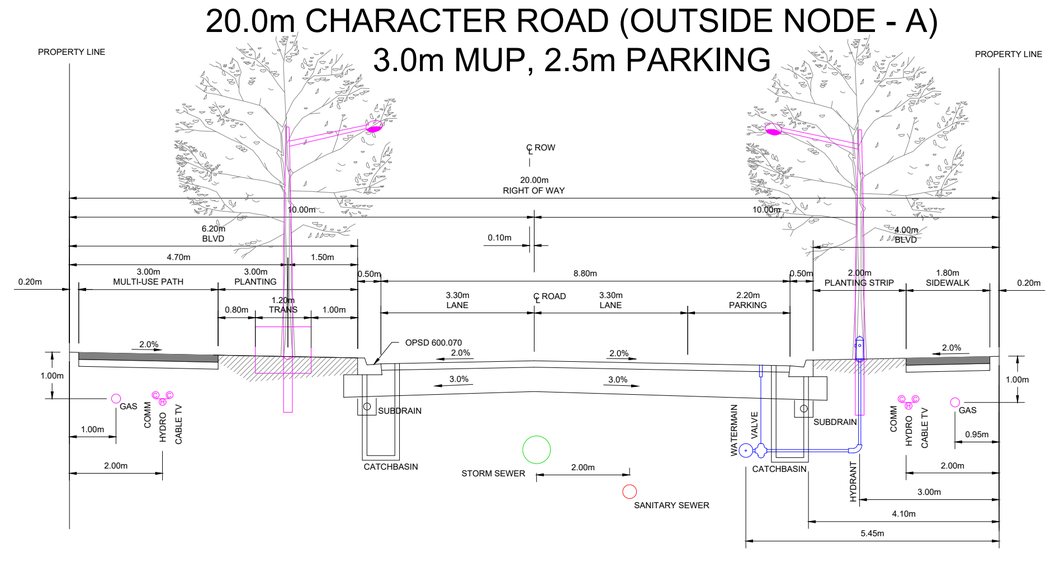
21.5m COLLECTOR ROAD



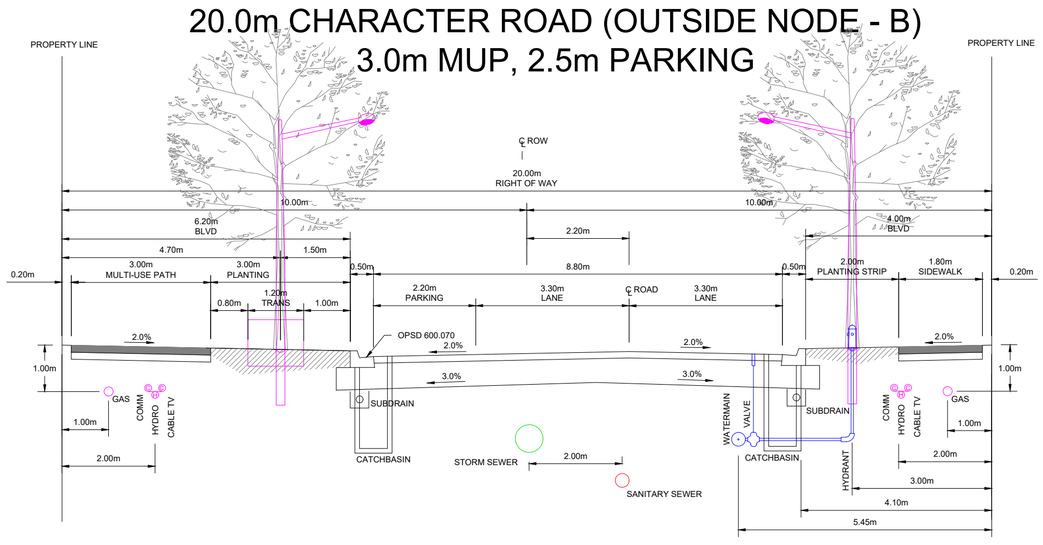
20.0m CHARACTER ROAD (WITHIN NODE)
3.0m CYCLE TRACK, 2.2m PARKING, HARDSCAPE BLVD



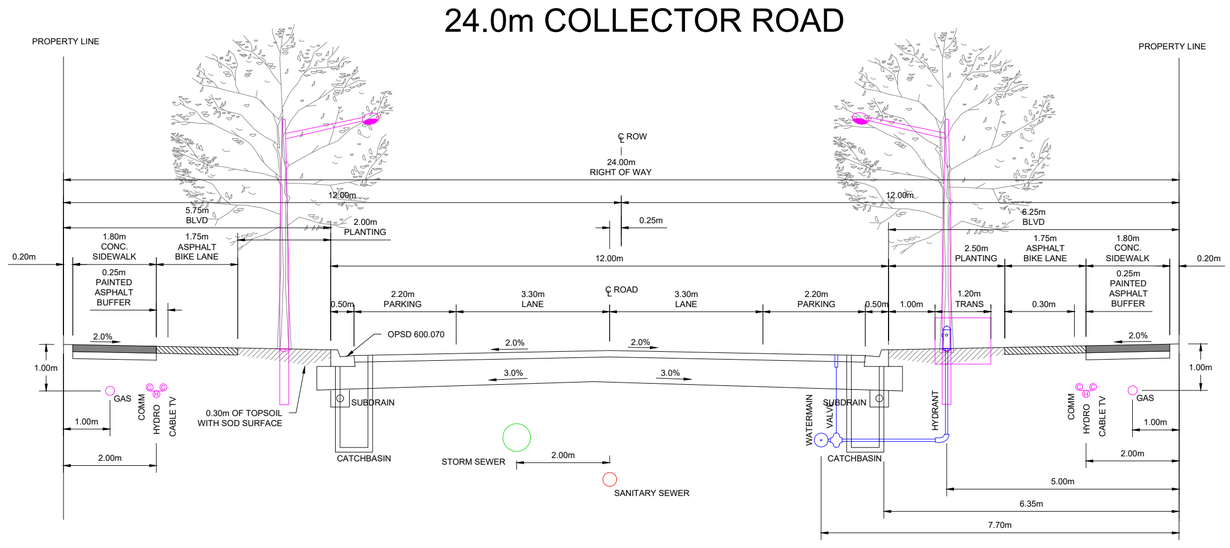
20.0m CHARACTER ROAD (OUTSIDE NODE - A)
3.0m MUP, 2.5m PARKING



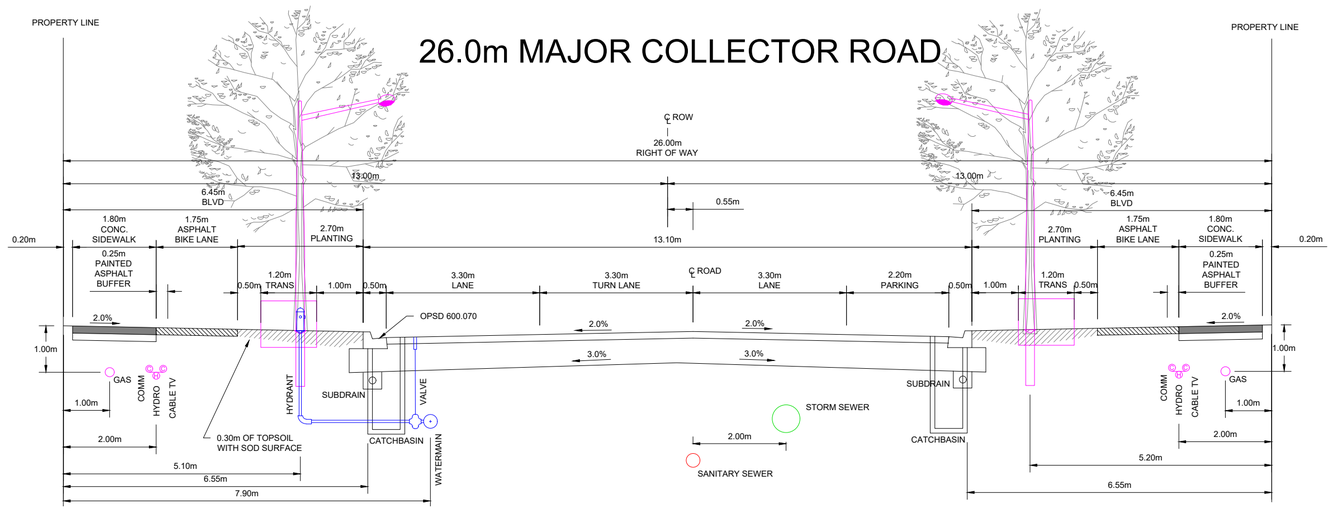
20.0m CHARACTER ROAD (OUTSIDE NODE - B)
3.0m MUP, 2.5m PARKING



24.0m COLLECTOR ROAD



26.0m MAJOR COLLECTOR ROAD



TRAFALGAR SECONDARY PLAN AREA PHASE 1 DAEFSS

LEGEND

FIGURE 2.6.1

TYPICAL ROW SECTIONS

May 2025

Appendix D
Existing Traffic Data

Date: 31-Oct-22
Intersection: Derry Rd & Trafalgar Rd

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	X	X	X	X	X	X
Direction	WBL	EB	NBL	SB	EBL	WB	SBL	NB				
Min Green	7	10	7	20	7	10	7	20				
Veh Ext.	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Yellow	3	4.6	3	4.2	3	4.6	3	4.2				
Red	1	2.3	1	2.6	1	2.3	1	2.6				
Walk		7		7		7		7				
Don't Walk		24		23		24		23				
Max 1	10	45	10	45	10	45	10	45				
Max 2	15	50	20	40	15	50	15	40				
Max 3	10	45	10	45	10	45	10	45				
Veh Recall		x				x						
Ped Recall												
Notes:	Sync Reference 3:15											

Date: 29-May-2020
Intersection: Britannia Rd @ Trafalgar Rd

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		X				
Direction	SBLT	NB	WBLT	EB	NBLT	SB		WB				
Min Green	7	25	7	15	7	25		15				
Veh Ext.	3.0	5.0	3.0	5.0	3.0	5.0		5.0				
Yellow	3	5	3	4	3	5		4				
Red	1	2	1	2	1	2		2				
Walk		7		7		7		7				
Don't Walk		30		33		15		18				
Max 1	15	41	11	37	11	41		48				
Max 2	11	50	15	40	25	50		40				
Max 3	11	40	11	28	11	40		39				
Max 4												
Veh Recall		x				x						
Ped Recall		x				x						
Notes:	Sync Reference 3:15 Max 1 6:00-9:00 Max 2 15:00-19:00 Max 3 9:00-15:00											

2.4 Model Calibration

The traffic models were calibrated according to the Region's TIS Guidelines and using the existing traffic data. Peak hour factors (PHF) were calculated based on the 15-minute volume breakdown of existing TMCs and are summarized in **Table 2-3**. Saturation flow rates and lane widths were set to the Synchro defaults of 1,900 vehicles per hour and 3.7 metres, respectively, as no specific values were provided in the Region's guidelines.

Table 2-3: Modeled Intersection Peak Hour Factors

No.	Intersection	Intersection Control	Peak Hours	
			a.m.	p.m.
1	Trafalgar Road and Highway 401 Westbound Off-Ramp	Signalized	0.94	0.93
2	Trafalgar Road and Highway 401 Eastbound Off-Ramp	Signalized	0.97	0.89
3	Trafalgar Road and Derry Road	Signalized	0.98	0.95
4	Eighth Line and Derry Road	Two-way-stop-controlled	0.96	0.97
5	Trafalgar Road and Britannia Road	Signalized	0.97	0.97
6	Eighth Line and Britannia Road	Two-way-stop-controlled	0.95	0.96
7	Trafalgar Road and E Lower Base Line	Signalized	0.99	0.94

After applying the calculated parameters noted above to the base model, three out of the seven analyzed intersections were either operating over capacity overall or had several movements operating over capacity based on the Region's critical intersection criteria, which is:

- V/C ratios of 0.85 or above for overall intersection operations, through movements, or shared through/turning movements;
- V/C ratios of 0.95 or above for exclusive movements; or
- Queues for an individual movement are projected to exceed available turning lane storage.

The following measures were implemented at the signalized intersection to calibrate the existing traffic models:

- Trafalgar Road and Derry Road:
  - Assumed to be semi-actuated with minimum recall on Derry Road;
  - Lost time adjustment of -1.0 seconds for protected/permitted left-turn movements and -2.0 seconds for through or right-turn movements for both peak hours; and
  - Phasing splits were optimized for both peak hours.
- Trafalgar Road and Britannia Road:
  - Lost time adjustment of -1.0 seconds for protected/permitted left-turn movements and -2.0 seconds for through or right-turn movements in the p.m. peak hour; and
  - Phasing splits were optimized in the peak hour.
- Trafalgar Road and E Lower Base Line:
  - Only southbound and westbound left-turn phases are included in the provided signal timing plan. However, an examination of Google Maps street view demonstrates a northbound left-turn signal head in operation. Therefore, northbound left-turn phases were coded into the signal timing plan for both peak hours;
  - The timing plan specifies Max 2 during the p.m. peak period (3:00 – 7:00 p.m.), which does not include left-turn phases. With this timing plan the southbound left-turn movement is significantly over capacity. Therefore, we have assumed the timing plan follows Max 1 in the p.m. peak hour with the addition of the northbound left-turn phase (same as the a.m. peak hour);
  - Lost time adjustment of -1.0 seconds for protected/permitted left-turn movements and -2.0 seconds for through or right-turn movements for both peak hours; and
  - Phasing splits were optimized for both peak hours.

The additional calibration measures such as optimizing signal timing plans and implementing lost time adjustments used to calibrate the existing traffic models are described in the following subsections.

2.4.1 Optimizing Signal Timing Plans

When the provided signal timing plans were combined with the existing traffic volumes in Synchro, there were several movements at most of the intersections that were operating over capacity. This is not possible under existing conditions as this would mean that some vehicles could not clear the intersection, but all the vehicles counted have done so after they clear the intersection. The Region advised that they regularly review and update their signal timing plans to accommodate the most current traffic volumes, and that optimizing signal timing plans under existing conditions would be acceptable to calibrate the traffic model for a Secondary Plan level study. More detailed studies should conform to the current version of the Regional Synchro Guidelines.

2.4.2 Lost Time Adjustment

Total lost time represents the time that is not usable by vehicles for a signal phase. It is the sum of the start-up lost time at the beginning of each green period and a portion of each clearance interval (yellow plus all-red time). Start-up lost time occurs at the beginning of the cycle when the traffic signal changes from red to green; it is the time that elapses between the signal changing and the queued vehicles moving through the intersection. The extension of effective green is the time that vehicles continue to pass through the intersection after the yellow interval begins. Total lost time is calculated via the following formula:

$$Total\ Lost\ Time = Yellow\ plus\ All\ Red\ Time + Start\ Up\ Lost\ Time - Extension\ of\ Effective\ Green$$

It is typical driver behaviour in the GTA to treat a portion or even all of the yellow time as green time, entering the intersection during the yellow interval, which impacts the intersection capacity. The Lost Time Adjustment (LTA) parameter in Synchro, defined as the following formula, is used in estimating the overall capacity of the intersection:

$$Lost\ Time\ Adjustment = Start\ Up\ Lost\ Time - Extension\ of\ Effective\ Green$$

The default start-up lost time and extension of effective green time are both 2.0 seconds according to the Highway Capacity Manual (HCM). This explains the default LTA of zero seconds.

Recognizing that the extension of effective green is increased when motorists enter the intersection during the yellow time, several municipalities, including York Region, Niagara Region, City of Mississauga and City of Toronto, recognize these driver behaviours and include recommendations for applying LTA to reflect these conditions within their TIS guidelines. Although this driver behaviour is not limited to only locations or time periods that experience traffic congestion, in the interest of providing a more conservative analysis, LTA was only applied to the three critical intersections based on the Region's criteria.

Also, as the length of clearance interval (yellow plus all-red time) increases for a phase, the extension of effective green time increases. However, as a rule of thumb, the maximum extension of effective green does not exceed the yellow interval time.

Therefore, a lost time adjustment of -1.0 second was applied to left-turn movements and -2.0 seconds for through movements at these intersections, considering the typical yellow interval of 3.0 seconds for a left-turn phase and 4.0 seconds for a through movement phase.

As a reference, the following are some guidelines from other municipalities and regions:

- York Region: Reasonable adjustment values of less than three seconds are permitted for critical movements (*Source: Section 1.12 Software and Input Parameters, page 18, York Region Transportation Mobility Plan Guidelines for Development Applications, November 2016*).
- City of Toronto: -1.0 second is the default LTA for all movements for peak period analysis (*Source: Section 5.2.11 Lost Time Adjust, page 120, City of Toronto Guidelines for Using Synchro 9, March 2016*).

Spectrum

Turning Movement Count
Location Name: DERRY RD & TRAFALGAR RD
Date: Wed, Jan 18, 2023 Deployment Lead: Walter Fugaj

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (1 . DERRY RD & TRAFALGAR RD)

Start Time	N Approach TRAFALGAR RD						E Approach DERRY RD						S Approach TRAFALGAR RD						W Approach DERRY RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	1	64	11	0	0	76	7	34	5	0	0	46	3	29	7	0	0	39	20	101	107	0	0	228	389	
06:15:00	7	89	7	0	0	103	14	40	5	0	0	59	7	49	12	0	0	68	20	123	86	0	0	229	459	
06:30:00	8	92	12	0	0	112	20	76	6	0	0	102	12	72	9	0	0	93	26	147	98	0	0	271	578	
06:45:00	10	75	12	0	0	97	14	68	15	0	0	97	7	48	10	0	0	65	29	153	118	0	0	300	559	1985
07:00:00	14	84	14	0	0	112	21	59	7	0	0	87	10	71	7	0	0	88	33	163	113	0	0	309	596	2192
07:15:00	4	80	17	0	0	101	19	82	7	0	0	108	16	85	15	0	0	116	49	256	142	0	0	447	772	2505
07:30:00	7	72	14	0	0	93	31	105	19	0	0	155	26	82	18	0	0	126	44	239	112	0	0	395	769	2696
07:45:00	11	78	18	0	0	107	21	123	9	0	0	153	14	86	12	0	0	112	50	337	121	0	0	508	880	3017
08:00:00	14	55	6	0	0	75	22	117	17	0	0	156	17	92	18	0	0	127	42	299	119	0	0	460	818	3239
08:15:00	9	78	12	0	0	99	33	107	20	0	0	160	17	100	16	0	0	133	45	337	138	0	0	520	912	3379
08:30:00	13	68	7	1	0	89	28	111	19	0	0	158	26	106	14	0	0	146	47	307	136	0	0	490	883	3493
08:45:00	7	69	20	0	0	96	27	113	12	0	0	152	26	77	25	0	0	128	46	226	104	0	0	376	752	3365
BREAK																										
11:00:00	17	59	5	0	0	81	9	69	8	0	0	86	6	78	19	0	0	103	22	79	45	0	0	146	416	
11:15:00	32	64	11	0	0	107	18	82	3	0	0	103	9	74	24	0	0	107	27	98	46	0	0	171	488	
11:30:00	27	64	2	0	0	93	16	94	11	0	0	121	4	77	24	0	0	105	25	122	56	0	0	203	522	
11:45:00	20	54	5	0	0	79	12	70	7	0	0	89	9	66	17	0	0	92	18	101	59	0	0	178	438	1864
12:00:00	20	61	6	0	0	87	19	83	6	0	0	108	9	52	9	0	0	70	19	97	62	0	0	178	443	1891
12:15:00	19	71	10	0	0	100	15	94	10	0	0	119	7	70	19	0	0	96	23	90	55	0	0	168	483	1886
12:30:00	17	63	16	0	0	96	13	89	3	0	0	105	8	74	26	0	0	108	25	98	50	0	0	173	482	1846
12:45:00	18	58	12	0	0	88	10	84	6	0	0	100	5	66	12	0	0	83	20	85	53	0	0	158	429	1837
BREAK																										
16:00:00	24	77	20	0	0	121	19	254	19	0	0	292	17	136	32	0	0	185	29	146	40	0	0	215	813	
16:15:00	44	72	21	0	0	137	17	219	21	0	0	257	11	136	43	0	0	190	28	147	47	0	0	222	806	
16:30:00	24	71	18	0	0	113	28	232	25	0	0	285	9	156	27	0	0	192	14	164	43	0	0	221	811	
16:45:00	36	75	31	0	0	142	26	279	21	0	0	326	6	140	24	0	0	170	25	136	37	0	0	198	836	3266
17:00:00	36	71	31	0	0	138	20	216	12	0	0	248	9	166	39	0	0	214	33	153	50	0	0	236	836	3289
17:15:00	24	78	23	0	0	125	31	311	20	0	0	362	16	142	28	0	0	186	30	174	41	0	0	245	918	3401
17:30:00	19	77	21	0	0	117	22	292	16	0	0	330	18	118	30	0	0	166	22	154	43	0	0	219	832	3422
17:45:00	36	68	21	0	0	125	19	232	12	0	0	263	16	118	26	0	0	160	23	156	36	0	0	215	763	3349
18:00:00	19	72	18	0	0	109	8	166	22	0	0	196	14	110	25	0	0	149	21	127	32	0	0	180	634	3147
18:15:00	19	69	31	0	0	119	15	165	17	0	0	197	14	95	29	0	0	138	16	131	37	0	0	184	638	2867
18:30:00	19	55	15	0	0	89	13	175	14	0	0	202	11	84	30	0	0	125	26	101	47	0	0	174	590	2625
18:45:00	20	64	13	0	0	97	9	133	9	0	0	151	9	80	27	0	0	116	23	96	36	0	0	155	519	2381
Grand Total	595	2247	480	1	0	3323	596	4374	403	0	0	5373	388	2935	673	0	0	3996	920	5143	2309	0	0	8372	**21064**	-
Approach%	17.9%	67.6%	14.4%	0%		-	11.1%	81.4%	7.5%	0%		-	9.7%	73.4%	16.8%	0%		-	11%	61.4%	27.6%	0%		-	-	-
Totals %	2.8%	10.7%	2.3%	0%		15.8%	2.8%	20.8%	1.9%	0%		25.5%	1.8%	13.9%	3.2%	0%		19%	4.4%	24.4%	11%	0%		39.7%	-	-
Heavy	190	183	8	0		-	18	133	12	0		-	3	196	31	0		-	43	132	191	0		-	-	-
Heavy %	31.9%	8.1%	1.7%	0%		-	3%	3%	3%	0%		-	0.8%	6.7%	4.6%	0%		-	4.7%	2.6%	8.3%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

TYLin
200 8800 DUFFERIN STREET
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:45 AM - 08:45 AM **Weather: Overcast Clouds (3.3 °C)**

Start Time	N Approach TRAFALGAR RD						E Approach DERRY RD						S Approach TRAFALGAR RD						W Approach DERRY RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	11	78	18	0	0	107	21	123	9	0	0	153	14	86	12	0	0	112	50	337	121	0	0	508	880
08:00:00	14	55	6	0	0	75	22	117	17	0	0	156	17	92	18	0	0	127	42	299	119	0	0	460	818
08:15:00	9	78	12	0	0	99	33	107	20	0	0	160	17	100	16	0	0	133	45	337	138	0	0	520	912
08:30:00	13	68	7	1	0	89	28	111	19	0	0	158	26	106	14	0	0	146	47	307	136	0	0	490	883
Grand Total	47	279	43	1	0	370	104	458	65	0	0	627	74	384	60	0	0	518	184	1280	514	0	0	1978	**3493**
Approach%	12.7%	75.4%	11.6%	0.3%		-	16.6%	73%	10.4%	0%		-	14.3%	74.1%	11.6%	0%		-	9.3%	64.7%	26%	0%		-	**-**
Totals %	1.3%	8%	1.2%	0%		10.6%	3%	13.1%	1.9%	0%		18%	2.1%	11%	1.7%	0%		14.8%	5.3%	36.6%	14.7%	0%		56.6%	**-**
PHF	0.84	0.89	0.6	0.25		0.86	0.79	0.93	0.81	0		0.98	0.71	0.91	0.83	0		0.89	0.92	0.95	0.93	0		0.95	**-**
Heavy	34	34	0	0		68	0	17	0	0		17	0	33	4	0		37	7	15	13	0		35	**-**
Heavy %	72.3%	12.2%	0%	0%		18.4%	0%	3.7%	0%	0%		2.7%	0%	8.6%	6.7%	0%		7.1%	3.8%	1.2%	2.5%	0%		1.8%	**-**
Lights	13	245	43	1		302	104	441	65	0		610	74	351	56	0		481	177	1265	501	0		1943	**-**
Lights %	27.7%	87.8%	100%	100%		81.6%	100%	96.3%	100%	0%		97.3%	100%	91.4%	93.3%	0%		92.9%	96.2%	98.8%	97.5%	0%		98.2%	**-**
Single-Unit Trucks	25	8	0	0		33	0	8	0	0		8	0	20	2	0		22	4	6	12	0		22	**-**
Single-Unit Trucks %	53.2%	2.9%	0%	0%		8.9%	0%	1.7%	0%	0%		1.3%	0%	5.2%	3.3%	0%		4.2%	2.2%	0.5%	2.3%	0%		1.1%	**-**
Buses	0	0	0	0		0	0	6	0	0		6	0	0	1	0		1	2	5	0	0		7	**-**
Buses %	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1%	0%	0%	1.7%	0%		0.2%	1.1%	0.4%	0%	0%		0.4%	**-**
Articulated Trucks	9	26	0	0		35	0	3	0	0		3	0	13	1	0		14	1	4	1	0		6	**-**
Articulated Trucks %	19.1%	9.3%	0%	0%		9.5%	0%	0.7%	0%	0%		0.5%	0%	3.4%	1.7%	0%		2.7%	0.5%	0.3%	0.2%	0%		0.3%	**-**

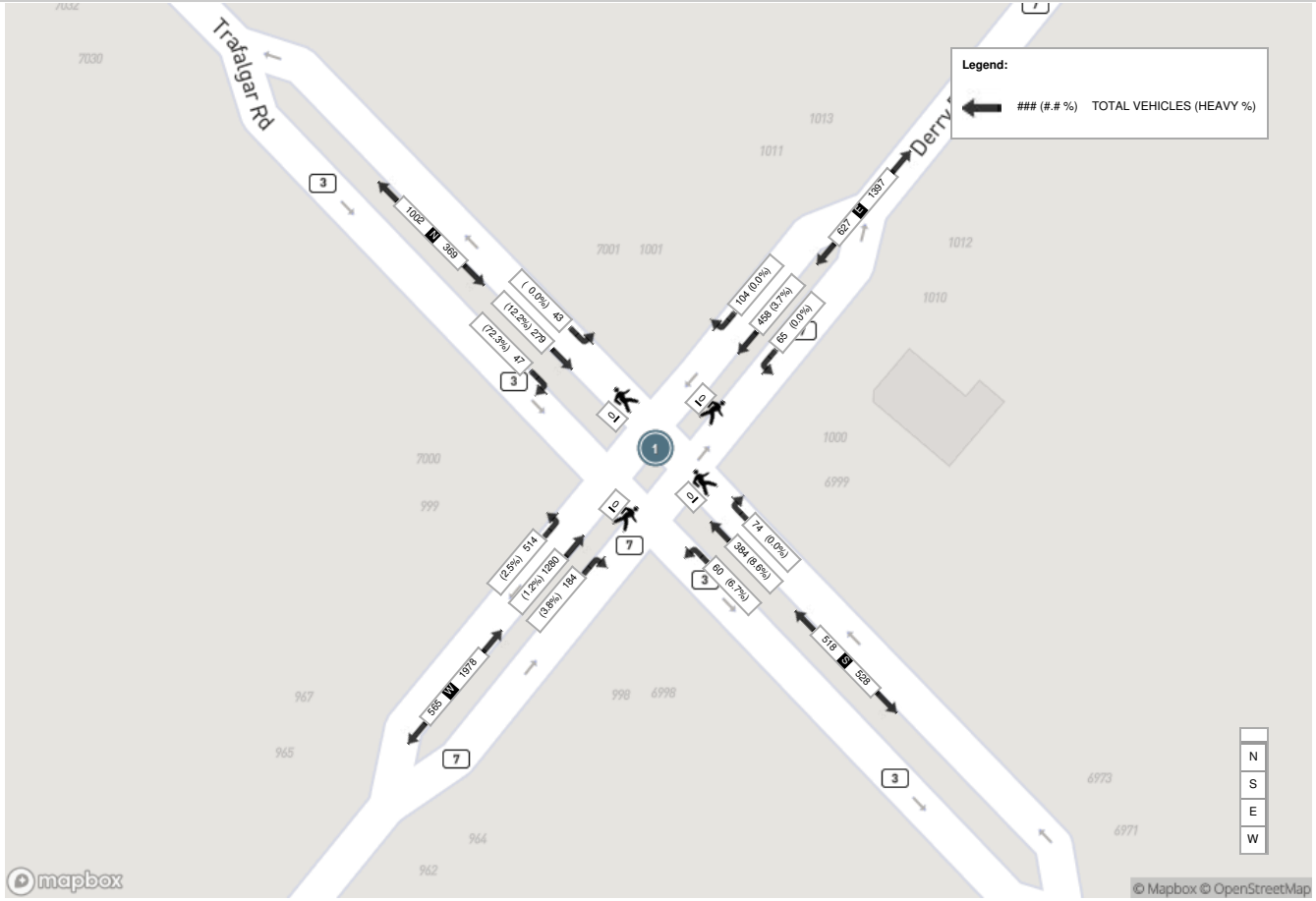
Peak Hour: 11:15 AM - 12:15 PM Weather: Overcast Clouds (4.24 °C)

Start Time	N Approach TRAFALGAR RD						E Approach DERRY RD						S Approach TRAFALGAR RD						W Approach DERRY RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
11:15:00	32	64	11	0	0	107	18	82	3	0	0	103	9	74	24	0	0	107	27	98	46	0	0	171	488
11:30:00	27	64	2	0	0	93	16	94	11	0	0	121	4	77	24	0	0	105	25	122	56	0	0	203	522
11:45:00	20	54	5	0	0	79	12	70	7	0	0	89	9	66	17	0	0	92	18	101	59	0	0	178	438
12:00:00	20	61	6	0	0	87	19	83	6	0	0	108	9	52	9	0	0	70	19	97	62	0	0	178	443
Grand Total	99	243	24	0	0	366	65	329	27	0	0	421	31	269	74	0	0	374	89	418	223	0	0	730	**1891**
Approach%	27%	66.4%	6.6%	0%		-	15.4%	78.1%	6.4%	0%		-	8.3%	71.9%	19.8%	0%		-	12.2%	57.3%	30.5%	0%		-	**-**
Totals %	5.2%	12.9%	1.3%	0%		19.4%	3.4%	17.4%	1.4%	0%		22.3%	1.6%	14.2%	3.9%	0%		19.8%	4.7%	22.1%	11.8%	0%		38.6%	**-**
PHF	0.77	0.95	0.55	0		0.86	0.86	0.88	0.61	0		0.87	0.86	0.87	0.77	0		0.87	0.82	0.86	0.9	0		0.9	**-**
Heavy	66	20	1	0		87	2	36	1	0		39	1	33	6	0		40	7	25	52	0		84	**-**
Heavy %	66.7%	8.2%	4.2%	0%		23.8%	3.1%	10.9%	3.7%	0%		9.3%	3.2%	12.3%	8.1%	0%		10.7%	7.9%	6%	23.3%	0%		11.5%	**-**
Lights	33	223	23	0		279	63	293	26	0		382	30	236	68	0		334	82	393	171	0		646	**-**
Lights %	33.3%	91.8%	95.8%	0%		76.2%	96.9%	89.1%	96.3%	0%		90.7%	96.8%	87.7%	91.9%	0%		89.3%	92.1%	94%	76.7%	0%		88.5%	**-**
Single-Unit Trucks	52	5	1	0		58	1	32	1	0		34	0	19	5	0		24	4	20	46	0		70	**-**
Single-Unit Trucks %	52.5%	2.1%	4.2%	0%		15.8%	1.5%	9.7%	3.7%	0%		8.1%	0%	7.1%	6.8%	0%		6.4%	4.5%	4.8%	20.6%	0%		9.6%	**-**
Buses	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	1	2	0	0		3	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	1.1%	0.5%	0%	0%		0.4%	**-**
Articulated Trucks	14	15	0	0		29	1	3	0	0		4	1	14	1	0		16	2	3	6	0		11	**-**
Articulated Trucks %	14.1%	6.2%	0%	0%		7.9%	1.5%	0.9%	0%	0%		1%	3.2%	5.2%	1.4%	0%		4.3%	2.2%	0.7%	2.7%	0%		1.5%	**-**

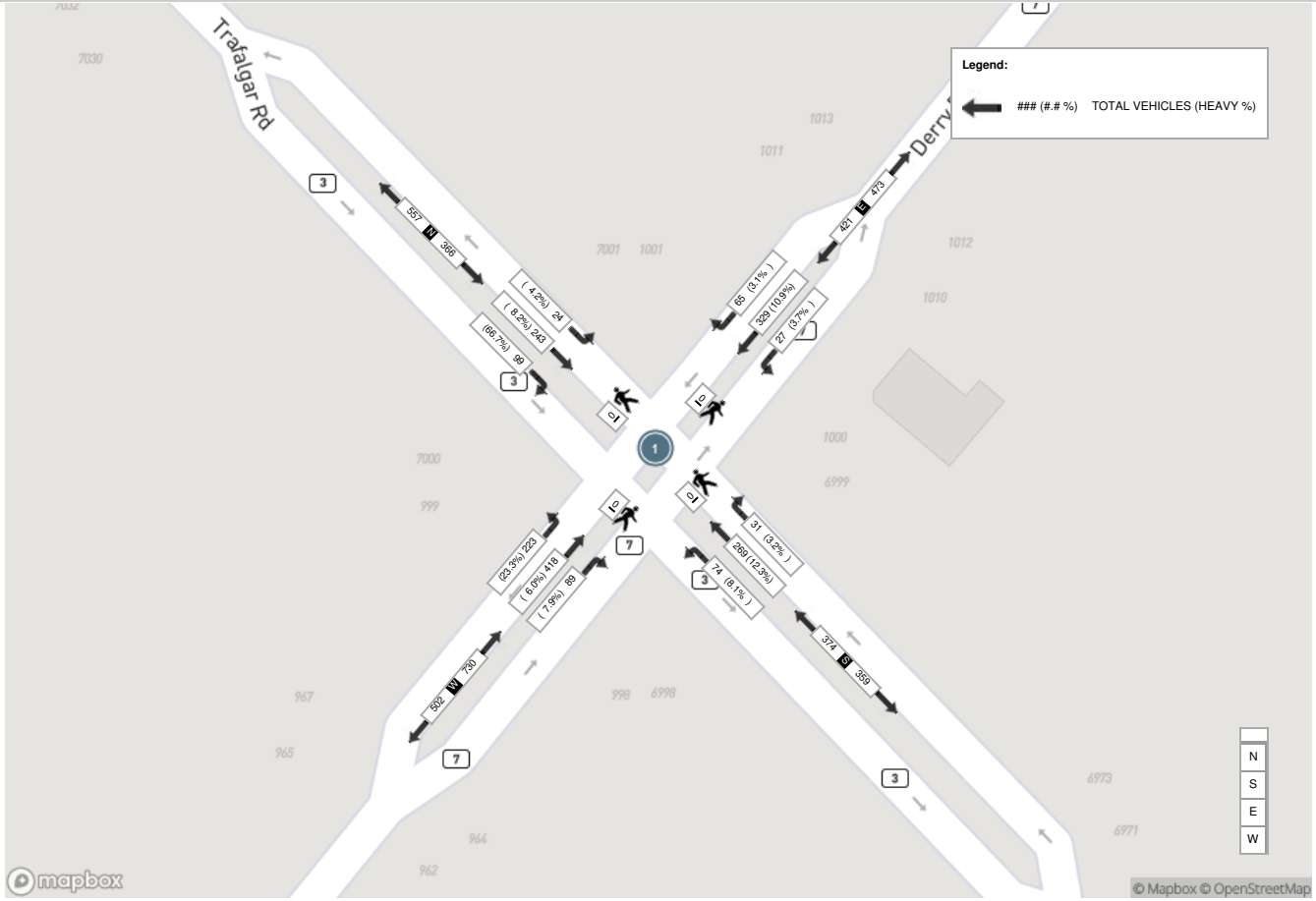
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (4.09 °C)

Start Time	N Approach TRAFALGAR RD						E Approach DERRY RD						S Approach TRAFALGAR RD						W Approach DERRY RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	36	75	31	0	0	142	26	279	21	0	0	326	6	140	24	0	0	170	25	136	37	0	0	198	836
17:00:00	36	71	31	0	0	138	20	216	12	0	0	248	9	166	39	0	0	214	33	153	50	0	0	236	836
17:15:00	24	78	23	0	0	125	31	311	20	0	0	362	16	142	28	0	0	186	30	174	41	0	0	245	918
17:30:00	19	77	21	0	0	117	22	292	16	0	0	330	18	118	30	0	0	166	22	154	43	0	0	219	832
Grand Total	115	301	106	0	0	522	99	1098	69	0	0	1266	49	566	121	0	0	736	110	617	171	0	0	898	**3422**
Approach%	22%	57.7%	20.3%	0%		-	7.8%	86.7%	5.5%	0%		-	6.7%	76.9%	16.4%	0%		-	12.2%	68.7%	19%	0%		-	**-**
Totals %	3.4%	8.8%	3.1%	0%		15.3%	2.9%	32.1%	2%	0%		37%	1.4%	16.5%	3.5%	0%		21.5%	3.2%	18%	5%	0%		26.2%	**-**
PHF	0.8	0.96	0.85	0		0.92	0.8	0.88	0.82	0		0.87	0.68	0.85	0.78	0		0.86	0.83	0.89	0.86	0		0.92	**-**
Heavy	17	9	1	0		27	0	9	2	0		11	0	17	2	0		19	2	17	29	0		48	**-**
Heavy %	14.8%	3%	0.9%	0%		5.2%	0%	0.8%	2.9%	0%		0.9%	0%	3%	1.7%	0%		2.6%	1.8%	2.8%	17%	0%		5.3%	**-**
Lights	98	292	105	0		495	99	1089	67	0		1255	49	549	119	0		717	108	600	142	0		850	**-**
Lights %	85.2%	97%	99.1%	0%		94.8%	100%	99.2%	97.1%	0%		99.1%	100%	97%	98.3%	0%		97.4%	98.2%	97.2%	83%	0%		94.7%	**-**
Single-Unit Trucks	14	3	1	0		18	0	6	1	0		7	0	9	2	0		11	2	9	22	0		33	**-**
Single-Unit Trucks %	12.2%	1%	0.9%	0%		3.4%	0%	0.5%	1.4%	0%		0.6%	0%	1.6%	1.7%	0%		1.5%	1.8%	1.5%	12.9%	0%		3.7%	**-**
Buses	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	5	0	0		5	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.6%	**-**
Articulated Trucks	3	6	0	0		9	0	0	1	0		1	0	8	0	0		8	0	3	7	0		10	**-**
Articulated Trucks %	2.6%	2%	0%	0%		1.7%	0%	0%	1.4%	0%		0.1%	0%	1.4%	0%	0%		1.1%	0%	0.5%	4.1%	0%		1.1%	**-**

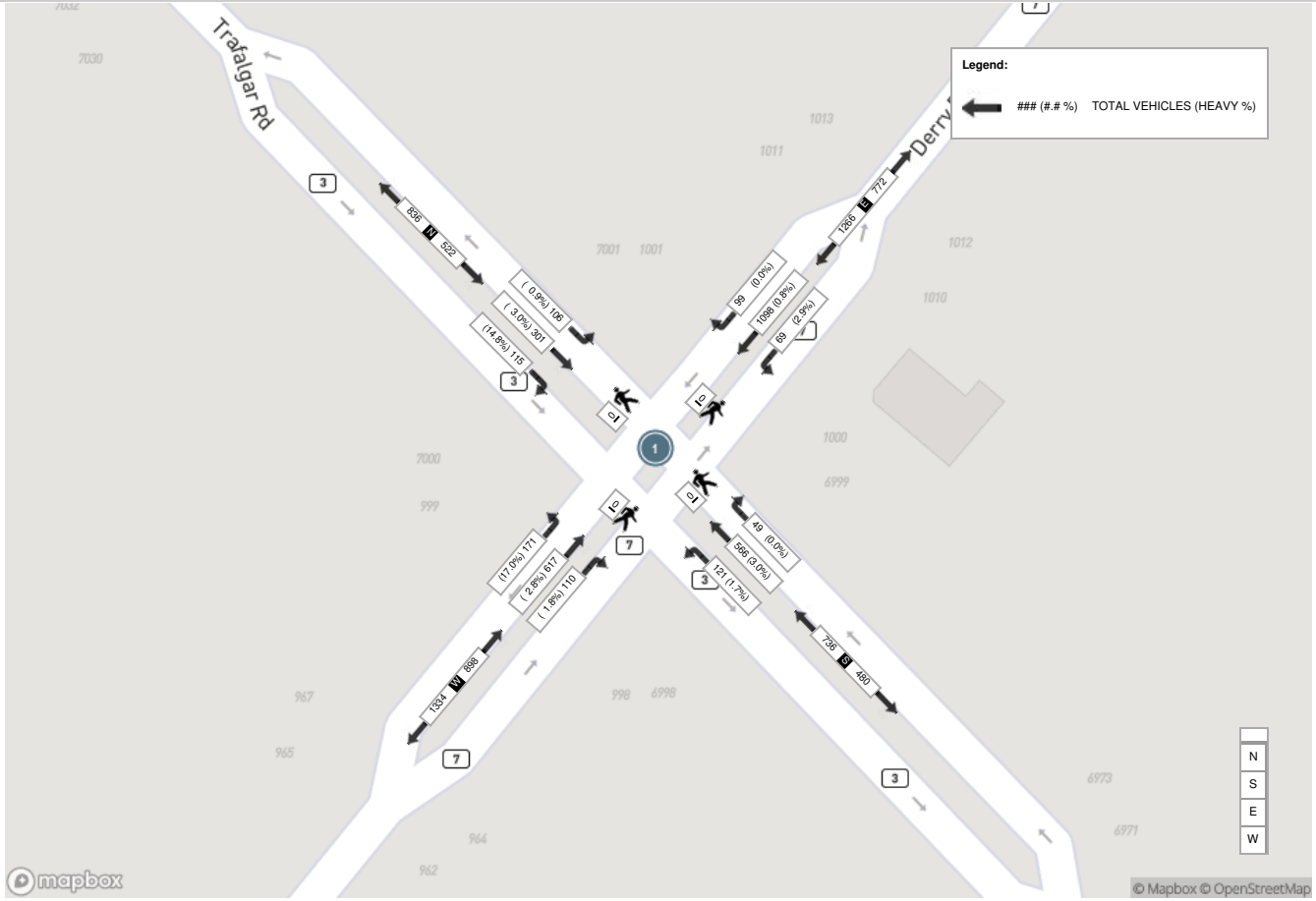
Peak Hour: 07:45 AM - 08:45 AM **Weather: Overcast Clouds (3.3 °C)**



Peak Hour: 11:15 AM - 12:15 PM **Weather: Overcast Clouds (4.24 °C)**



Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (4.09 °C)**



Spectrum

Turning Movement Count
Location Name: BRITANNIA RD & TRAFALGAR RD
Date: Tue, Sep 28, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Turning Movement Count (3 . BRITANNIA RD & TRAFALGAR RD)

Start Time	N Approach TRAFALGAR RD						E Approach BRITANNIA RD						S Approach TRAFALGAR RD						W Approach BRITANNIA RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	5	106	5	0	0	116	8	11	7	0	0	26	4	52	4	0	0	60	27	28	7	0	0	62	264	
06:15:00	5	133	8	0	0	146	11	23	9	0	0	43	2	61	7	0	0	70	41	35	14	0	0	90	349	
06:30:00	7	163	9	0	0	179	10	28	14	0	0	52	17	71	18	0	0	106	66	38	12	0	0	116	453	
06:45:00	6	151	10	0	0	167	13	43	22	0	0	78	9	79	17	0	0	105	59	46	9	0	0	114	464	1530
07:00:00	4	129	4	0	0	137	8	38	19	0	0	65	17	105	27	0	0	149	51	56	10	0	0	117	468	1734
07:15:00	6	161	12	0	0	179	13	53	26	0	0	92	17	155	25	0	0	197	71	96	9	0	0	176	644	2029
07:30:00	8	196	16	0	0	220	7	68	36	0	0	111	43	161	26	0	0	230	63	89	12	0	0	164	725	2301
07:45:00	2	159	21	0	0	182	15	63	26	0	0	104	42	123	38	0	0	203	72	120	8	0	0	200	689	2526
08:00:00	5	143	22	0	0	170	14	56	34	0	0	104	42	166	40	0	0	248	70	121	13	0	0	204	726	2784
08:15:00	6	178	11	0	0	195	18	62	29	0	0	109	33	114	27	0	0	174	52	98	8	0	0	158	636	2776
08:30:00	6	160	17	0	0	183	12	78	37	0	0	127	23	150	40	0	0	213	72	76	7	0	0	155	678	2729
08:45:00	7	137	3	0	0	147	13	68	36	0	0	117	30	159	46	0	0	235	52	81	10	0	0	143	642	2682
BREAK																										
16:00:00	15	129	16	0	0	160	31	134	32	0	0	197	25	164	49	0	0	238	50	72	13	0	0	135	730	
16:15:00	14	148	10	0	0	172	29	152	34	0	0	215	31	225	79	0	0	335	57	99	13	0	0	169	891	
16:30:00	8	132	14	0	0	154	19	141	28	0	0	188	30	183	65	0	0	278	39	74	10	0	0	123	743	
16:45:00	11	123	20	0	0	154	8	122	23	0	0	153	25	185	76	0	0	286	52	104	10	0	0	166	759	3123
17:00:00	11	110	14	0	0	135	21	124	29	0	0	174	38	245	84	1	0	368	43	99	17	0	0	159	836	3229
17:15:00	18	157	11	0	0	186	17	145	40	0	0	202	44	207	79	0	0	330	46	92	21	1	0	160	878	3216
17:30:00	7	132	22	0	0	161	17	145	26	0	0	188	49	190	77	0	0	316	53	92	15	0	0	160	825	3298
17:45:00	13	123	18	0	0	154	16	114	28	0	0	158	36	203	55	0	0	294	34	89	8	0	0	131	737	3276
18:00:00	13	133	18	0	0	164	16	94	24	0	0	134	34	167	81	0	0	282	44	72	11	0	0	127	707	3147
18:15:00	8	130	20	0	0	158	13	97	18	0	0	128	31	139	65	0	0	235	32	80	11	0	0	123	644	2913
18:30:00	6	146	20	0	0	172	18	94	21	0	0	133	30	147	57	0	0	234	36	58	9	0	0	103	642	2730
18:45:00	8	91	12	0	0	111	7	79	15	0	0	101	22	133	69	0	0	224	48	65	8	0	0	121	557	2550
Grand Total	199	3370	333	0	0	3902	354	2032	613	0	0	2999	674	3584	1151	1	0	5410	1230	1880	265	1	0	3376	**15687**	-
Approach%	5.1%	86.4%	8.5%	0%		-	11.8%	67.8%	20.4%	0%		-	12.5%	66.2%	21.3%	0%		-	36.4%	55.7%	7.8%	0%		-	**-**	-
Totals %	1.3%	21.5%	2.1%	0%		24.9%	2.3%	13%	3.9%	0%		19.1%	4.3%	22.8%	7.3%	0%		34.5%	7.8%	12%	1.7%	0%		21.5%	**-**	-
Heavy	30	251	7	0		-	6	77	3	0		-	10	230	45	0		-	50	58	29	0		-	**-**	-
Heavy %	15.1%	7.4%	2.1%	0%		-	1.7%	3.8%	0.5%	0%		-	1.5%	6.4%	3.9%	0%		-	4.1%	3.1%	10.9%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:15 AM - 08:15 AM Weather: Overcast Clouds (12.27 °C)

Start Time	N Approach TRAFALGAR RD						E Approach BRITANNIA RD						S Approach TRAFALGAR RD						W Approach BRITANNIA RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:15:00	6	161	12	0	0	179	13	53	26	0	0	92	17	155	25	0	0	197	71	96	9	0	0	176	644
07:30:00	8	196	16	0	0	220	7	68	36	0	0	111	43	161	26	0	0	230	63	89	12	0	0	164	725
07:45:00	2	159	21	0	0	182	15	63	26	0	0	104	42	123	38	0	0	203	72	120	8	0	0	200	689
08:00:00	5	143	22	0	0	170	14	56	34	0	0	104	42	166	40	0	0	248	70	121	13	0	0	204	726
Grand Total	21	659	71	0	0	751	49	240	122	0	0	411	144	605	129	0	0	878	276	426	42	0	0	744	**2784**
Approach%	2.8%	87.7%	9.5%	0%		-	11.9%	58.4%	29.7%	0%		-	16.4%	68.9%	14.7%	0%		-	37.1%	57.3%	5.6%	0%		-	-
Totals %	0.8%	23.7%	2.6%	0%		27%	1.8%	8.6%	4.4%	0%		14.8%	5.2%	21.7%	4.6%	0%		31.5%	9.9%	15.3%	1.5%	0%		26.7%	-
PHF	0.66	0.84	0.81	0		0.85	0.82	0.88	0.85	0		0.93	0.84	0.91	0.81	0		0.89	0.96	0.88	0.81	0		0.91	-
Heavy	8	69	3	0		80	1	23	0	0		24	2	75	9	0		86	24	20	4	0		48	-
Heavy %	38.1%	10.5%	4.2%	0%		10.7%	2%	9.6%	0%	0%		5.8%	1.4%	12.4%	7%	0%		9.8%	8.7%	4.7%	9.5%	0%		6.5%	-
Lights	13	590	68	0		671	48	217	122	0		387	142	530	120	0		792	252	406	38	0		696	-
Lights %	61.9%	89.5%	95.8%	0%		89.3%	98%	90.4%	100%	0%		94.2%	98.6%	87.6%	93%	0%		90.2%	91.3%	95.3%	90.5%	0%		93.5%	-
Single-Unit Trucks	4	47	2	0		53	1	18	0	0		19	2	57	8	0		67	15	18	4	0		37	-
Single-Unit Trucks %	19%	7.1%	2.8%	0%		7.1%	2%	7.5%	0%	0%		4.6%	1.4%	9.4%	6.2%	0%		7.6%	5.4%	4.2%	9.5%	0%		5%	-
Buses	0	1	1	0		2	0	2	0	0		2	0	1	1	0		2	2	0	0	0		2	-
Buses %	0%	0.2%	1.4%	0%		0.3%	0%	0.8%	0%	0%		0.5%	0%	0.2%	0.8%	0%		0.2%	0.7%	0%	0%	0%		0.3%	-
Articulated Trucks	4	21	0	0		25	0	3	0	0		3	0	17	0	0		17	7	2	0	0		9	-
Articulated Trucks %	19%	3.2%	0%	0%		3.3%	0%	1.3%	0%	0%		0.7%	0%	2.8%	0%	0%		1.9%	2.5%	0.5%	0%	0%		1.2%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-

PHF = 0.96

Spectrum

Turning Movement Count
Location Name: BRITANNIA RD & TRAFALGAR RD
Date: Tue, Sep 28, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

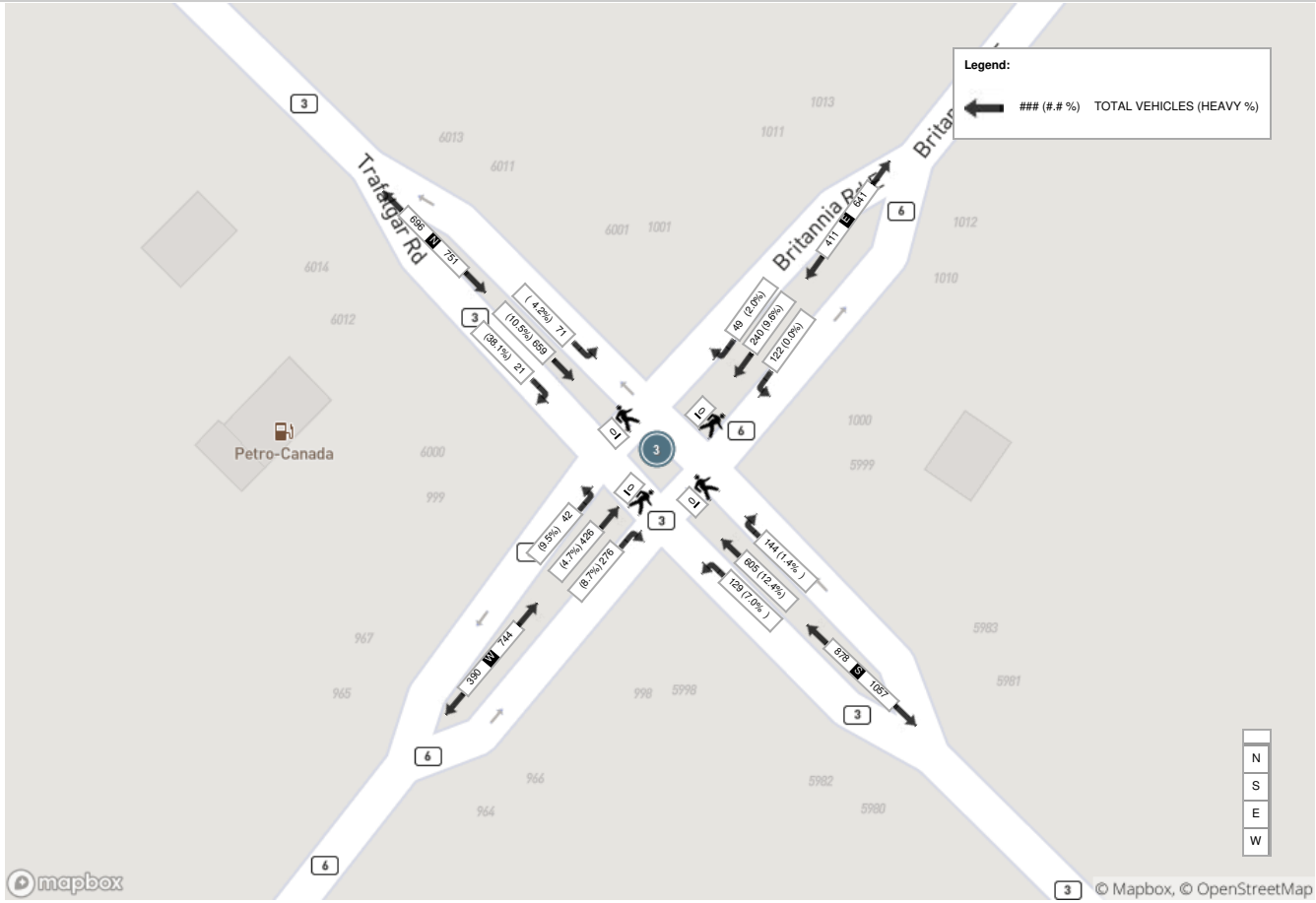
Peak Hour: 04:45 PM - 05:45 PM **Weather: Scattered Clouds (16.94 °C)**

Start Time	N Approach TRAFALGAR RD						E Approach BRITANNIA RD						S Approach TRAFALGAR RD						W Approach BRITANNIA RD						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	11	123	20	0	0	154	8	122	23	0	0	153	25	185	76	0	0	286	52	104	10	0	0	166	759
17:00:00	11	110	14	0	0	135	21	124	29	0	0	174	38	245	84	1	0	368	43	99	17	0	0	159	836
17:15:00	18	157	11	0	0	186	17	145	40	0	0	202	44	207	79	0	0	330	46	92	21	1	0	160	878
17:30:00	7	132	22	0	0	161	17	145	26	0	0	188	49	190	77	0	0	316	53	92	15	0	0	160	825
Grand Total	47	522	67	0	0	636	63	536	118	0	0	717	156	827	316	1	0	1300	194	387	63	1	0	645	**3298**
Approach%	7.4%	82.1%	10.5%	0%		-	8.8%	74.8%	16.5%	0%		-	12%	63.6%	24.3%	0.1%		-	30.1%	60%	9.8%	0.2%		-	-
Totals %	1.4%	15.8%	2%	0%		19.3%	1.9%	16.3%	3.6%	0%		21.7%	4.7%	25.1%	9.6%	0%		39.4%	5.9%	11.7%	1.9%	0%		19.6%	-
PHF	0.65	0.83	0.76	0		0.85	0.75	0.92	0.74	0		0.89	0.8	0.84	0.94	0.25		0.88	0.92	0.93	0.75	0.25		0.97	-
Heavy	2	21	1	0		24	1	5	0	0		6	3	26	7	0		36	7	7	9	0		23	-
Heavy %	4.3%	4%	1.5%	0%		3.8%	1.6%	0.9%	0%	0%		0.8%	1.9%	3.1%	2.2%	0%		2.8%	3.6%	1.8%	14.3%	0%		3.6%	-
Lights	45	499	66	0		610	62	531	118	0		711	153	801	309	1		1264	187	380	54	1		622	-
Lights %	95.7%	95.6%	98.5%	0%		95.9%	98.4%	99.1%	100%	0%		99.2%	98.1%	96.9%	97.8%	100%		97.2%	96.4%	98.2%	85.7%	100%		96.4%	-
Single-Unit Trucks	0	15	1	0		16	0	3	0	0		3	2	21	5	0		28	4	6	4	0		14	-
Single-Unit Trucks %	0%	2.9%	1.5%	0%		2.5%	0%	0.6%	0%	0%		0.4%	1.3%	2.5%	1.6%	0%		2.2%	2.1%	1.6%	6.3%	0%		2.2%	-
Buses	0	2	0	0		2	0	1	0	0		1	1	0	1	0		2	2	0	0	0		2	-
Buses %	0%	0.4%	0%	0%		0.3%	0%	0.2%	0%	0%		0.1%	0.6%	0%	0.3%	0%		0.2%	1%	0%	0%	0%		0.3%	-
Articulated Trucks	2	4	0	0		6	1	1	0	0		2	0	5	1	0		6	1	1	5	0		7	-
Articulated Trucks %	4.3%	0.8%	0%	0%		0.9%	1.6%	0.2%	0%	0%		0.3%	0%	0.6%	0.3%	0%		0.5%	0.5%	0.3%	7.9%	0%		1.1%	-
Bicycles on Road	0	2	0	0		2	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-

PHF = 0.94

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 07:15 AM - 08:15 AM **Weather: Overcast Clouds (12.27 °C)**

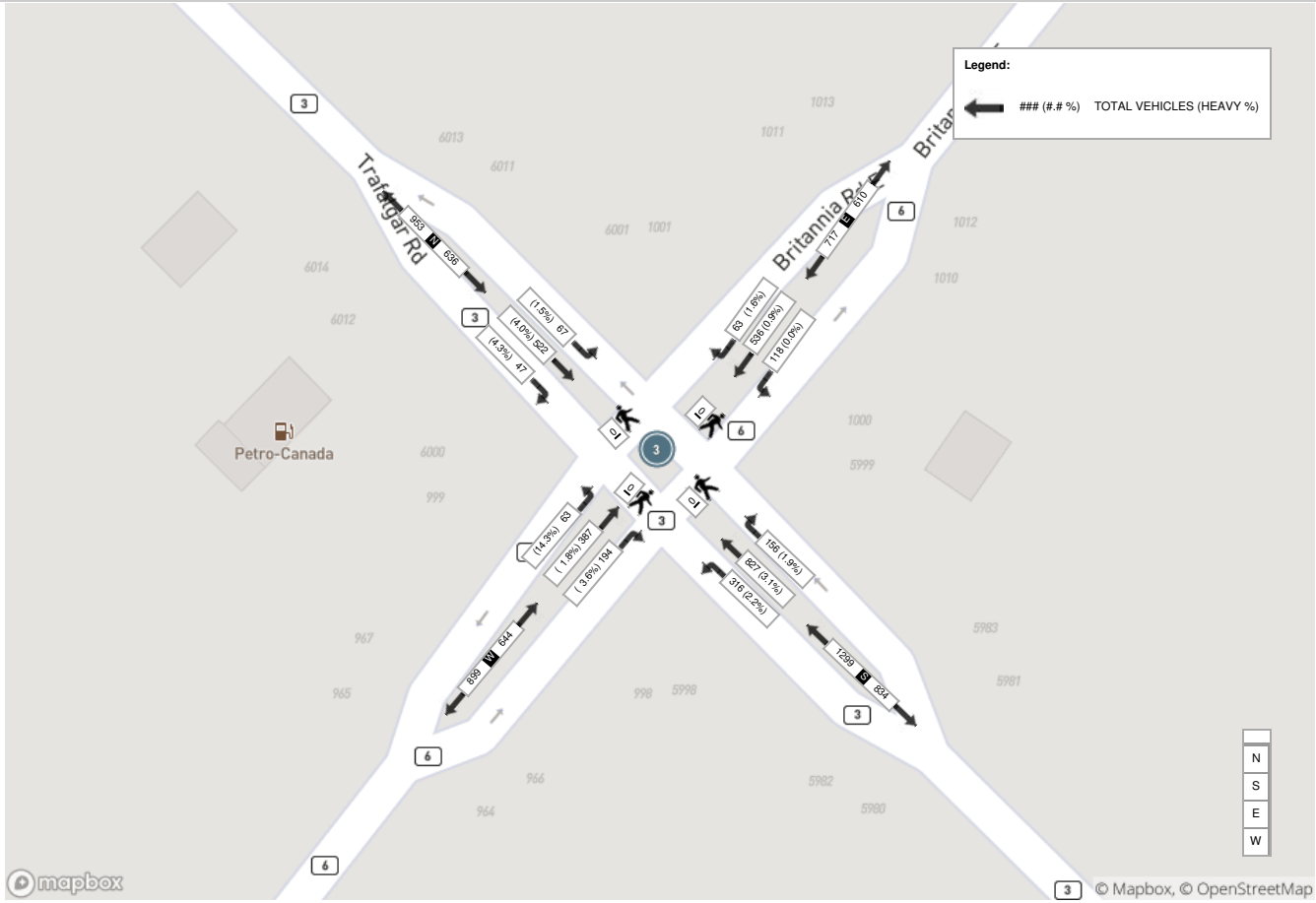


Spectrum

Turning Movement Count
Location Name: BRITANNIA RD & TRAFALGAR RD
Date: Tue, Sep 28, 2021 Deployment Lead: Theo Daglis

The Municipal Infrastructure Group
SUITE 200 8800 DUFFERIN ST
VAUGHAN ONTARIO, L4K 0C5
CANADA

Peak Hour: 04:45 PM - 05:45 PM **Weather: Scattered Clouds (16.94 °C)**



Appendix E
Excerpts from Halton Region Access Management Guideline and Halton TMP

Rural/Natural Heritage System (R)

Rural lands are designated areas for agriculture and protection of infrastructure that supports farming and Natural Heritage Areas (NHS) are lands designated for natural area conservation. In planning for new urban areas, the Region is seeking to minimize development of prime agricultural lands. Regional Roads in Rural/NHS lands should respect the rural character of the area.

Corridors (C)

Corridors are urban growth areas identified along major roads, arterials or higher order corridors that have the potential to provide a focus for higher density mixed-use development and employment use consistent with planned transit service levels. The design and physical appearance of corridors contribute directly to livability and economic success and therefore should offer a positive community environment and convenient access for residents and businesses to a variety of goods and services.

Corridors will generally vary in use along their length and their design needs to reflect the change in surroundings. Over time, corridors could include a mix of uses such as: sidewalk-fronting shops or businesses, offices, civic uses appropriately scaled and designed public spaces and a broad mix of residential forms and densities. Corridors that travel through employment lands are to provide for development of quality business environment and include a range of offices, industrial-type buildings and services supporting employment such as business related retail and restaurants located in buildings with doors and windows that front the street.

Node (N)

Nodes are defined as compact, transit-oriented, pedestrian/cyclist friendly and mixed use/residential neighbourhood centers that are areas of more intensive urban uses within a community. They provide area residents with a hub to meet a variety of daily needs (goods and services) and serve as a social focus for the community and as concentrations of office employment uses. Nodes are generally located at the intersections of major corridors within the identified intensification areas and extend approximately 200-400 metres from the intersection.

Halton Region's access spacing guidelines are further refined by providing spacing for cross-section type as identified in the Region's Right-of-Way guidelines. Please see Appendix B for the individual cross-sections by Rural/NHS (R), Corridor (C) and Node (N).

Table 1 outlines the minimum spacing requirements for access and road connections to Regional roads. As speed limits increase, greater minimum distance is required between access locations. Access spacing can be reduced to a minimum of 250 metres within the intensification areas (Node) identified within the Regional Official Plan that can substantiated through the submission of a comprehensive corridor analysis and Transportation Impact Study analyzing all possible alternatives and taking into consideration land use and community factors. Access spacing is measured stop bar to stop bar.

Table 1 – Minimum Access Spacing

TYPE*	Full Movement Access (m)	Right in/out Access (m)
R1	400	115
R2	400	115
C1	400	115
C2	300	115
C3	300	115
C4	300	115
C5	300	115
N1	250	115
N2	250	115

3.4 SIGHT DISTANCE REQUIREMENTS

A safe sight distance is the distance needed by a driver on a Major Arterial, or a driver exiting a driveway or street to verify that the road is clear and to avoid conflicts with other vehicles.

Adequate sight distance must be provided for both movements into and out of an access with a minimum of hazard and disruption to traffic. Sight distance requirements must be considered both for vehicles approaching the access and departing from the stopped position at the access.

The sight distances should be designed to enable existing vehicles:

- Upon turning left or right, to accelerate to the operating speed of the street without causing approaching vehicles to reduce speed by more than 15km/h; and
- Upon turning left, to clear the near half of the street without conflicting with vehicles approaching from the left.

The operating characteristics (driver eye elevation, visibility of the vehicle, and vehicle acceleration characteristics) of both trucks and passenger vehicles should be considered if both vehicle types are anticipated to utilize the access.

3.5 DRIVEWAY AND SITE CONFIGURATION

Driveway location and design affects the ability of a driver to safely and easily enter and exit a site. Road classification, right-of-way, design speed, design hour volumes, and land use influence driveway location and design. For driveways to be permitted along major Regional roads, the design of the proposed driveways should be feasible to minimize interference with the mobility of the through traffic by designing the driveway to provide desirable:

- Driveway width – See Section 5.4 -Table 2
- Driveway radii – See Section 5.4 – Table 3
- Clear throat conditions

Appendix F
Background Development Trip Generation

Report for TAZ: **31FB (RNA Assumption)**

Mode Split Reduction: 28%

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing	Trip Generation Equation or Average Rate	T = 0.71(X) +4.8			Ln(T) = 0.96Ln(X) +0.2		
ITE LUC 210	Directional Split	25%	75%	-	63%	37%	-
1060 Units	Gross Trips	196	586	782	661	388	1,049
	Mode Split Reduction (28%)	-56	-164	-220	-184	-109	-293
	Net Trips	**140**	**422**	**562**	**477**	**279**	**756**
Multi-family Housing (Low-rise)	Trip Generation Equation or Average Rate	Ln(T) = 0.95Ln(X) -0.51			Ln(T) = 0.89Ln(X) -0.02		
ITE LUC 220	Directional Split	23%	77%	-	63%	37%	-
812 Units	Gross Trips	87	292	379	289	168	457
	Mode Split Reduction (28%)	-24	-82	-106	-81	-47	-128
	Net Trips	**63**	**210**	**273**	**208**	**121**	**329**
Multi-family Housing (Mid-rise)	Trip Generation Equation or Average Rate	Ln(T) = 0.98Ln(X) -0.98			Ln(T) = 0.96Ln(X) -0.63		
ITE LUC 221	Directional Split	26%	74%	-	61%	39%	-
263 Units	Gross Trips	23	69	92	72	49	121
	Mode Split Reduction (28%)	-6	-19	-25	-20	-14	-34
	Net Trips	**17**	**50**	**67**	**52**	**35**	**87**
Multi-family Housing (High-rise)	Trip Generation Equation or Average Rate	T = 0.28(X) +12.86			T = 0.34(X) +8.56		
ITE LUC 222	Directional Split	24%	76%	-	61%	39%	-
3279 Units	Gross Trips	242	767	1,009	717	459	1,176
	Mode Split Reduction (28%)	-67	-214	-282	-200	-128	-329
	Net Trips	**174**	**553**	**727**	**516**	**331**	**847**
Total Residential 5414 Units	**Net Trips**	**394**	**1,235**	**1,629**	**1,253**	**766**	**2,019**
Shopping Center	Trip Generation Equation or Average Rate	0.94			Ln(T) = 0.74Ln(X) +2.89		
ITE LUC 820	Directional Split	62%	38%	-	48%	52%	-
122000 sq.ft. GFA	Gross Trips	70	44	114	380	413	793
	Mode Split Reduction (28%)	-21	-13	-33	-106	-115	-220
	Pass-by (34% PM)	0	0	0	-101	-101	-201
	Net Trips	**50**	**31**	**81**	**174**	**198**	**372**
Elementary School	Trip Generation Equation or Average Rate	0.67			0.17		
ITE LUC 520	Directional Split	54%	46%	-	48%	52%	-
1450 Students	Gross Trips	524	448	972	118	128	246
	Mode Split Reduction (28%)	-146	-126	-272	-34	-36	-70
	Net Trips	**378**	**322**	**700**	**84**	**92**	**176**
High School	Trip Generation Equation or Average Rate	0.52			0.14		
ITE LUC 530	Directional Split	67%	33%	-	48%	52%	-
1500 Students	Gross Trips	523	257	780	101	109	210
	Mode Split Reduction (28%)	-146	-72	-218	-28	-31	-59
	Net Trips	**377**	**185**	**562**	**73**	**78**	**151**
District Park	Trip Generation Equation or Average Rate	0.02			T = 0.06(X) +22.6		
ITE LUC 411	Directional Split	-	-	-	-	-	-
15 Acres	Gross Trips	0	0	0	13	11	24
	Mode Split Reduction (28%)	0	0	0	0	0	0
	Net Trips	**0**	**0**	**0**	**13**	**11**	**24**
Total Non-Residential	**Net Trips**	**805**	**538**	**1,343**	**344**	**379**	**723**
Total Trips	**Net Trips**	**1,199**	**1,773**	**2,972**	**1,597**	**1,145**	**2,742**

Report for TAZ: **41FB (RNA Assumption)**

Mode Split Reduction: 28%

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing	Trip Generation Equation or Average Rate	T = 0.71(X) +4.8			Ln(T) = 0.96Ln(X) +0.2		
ITE LUC 210	Directional Split	25%	75%	-	63%	37%	-
2296 Units	Gross Trips	424	1,275	1,699	1,436	843	2,279
	Mode Split Reduction (28%)	-120	-356	-476	-400	-236	-636
	Net Trips	**304**	**919**	**1,223**	**1,036**	**607**	**1,643**
Multi-family Housing (Low-rise)	Trip Generation Equation or Average Rate	Ln(T) = 0.95Ln(X) -0.51			Ln(T) = 0.89Ln(X) -0.02		
ITE LUC 220	Directional Split	23%	77%	-	63%	37%	-
2505 Units	Gross Trips	267	892	1,159	875	513	1,388
	Mode Split Reduction (28%)	-74	-249	-323	-246	-145	-391
	Net Trips	**193**	**643**	**836**	**629**	**368**	**997**
Multi-family Housing (Mid-rise)	Trip Generation Equation or Average Rate	Ln(T) = 0.98Ln(X) -0.98			Ln(T) = 0.96Ln(X) -0.63		
ITE LUC 221	Directional Split	26%	74%	-	61%	39%	-
754 Units	Gross Trips	67	191	258	205	132	337
	Mode Split Reduction (28%)	-19	-54	-73	-57	-38	-95
	Net Trips	**48**	**137**	**185**	**148**	**94**	**242**
Multi-family Housing (High-rise)	Trip Generation Equation or Average Rate	T = 0.28(X) +12.86			T = 0.34(X) +8.56		
ITE LUC 222	Directional Split	24%	76%	-	61%	39%	-
7705 Units	Gross Trips	555	1,756	2,311	1,661	1,064	2,725
	Mode Split Reduction (28%)	-154	-490	-645	-465	-297	-763
	Net Trips	**400**	**1,266**	**1,666**	**1,195**	**767**	**1,962**
Total Residential 13260 Units	**Net Trips**	**945**	**2,965**	**3,910**	**3,008**	**1,836**	**4,844**
Shopping Center	Trip Generation Equation or Average Rate	0.94			Ln(T) = 0.74Ln(X) +2.89		
ITE LUC 820	Directional Split	62%	38%	-	48%	52%	-
271000 sq.ft. GFA	Gross Trips	157	97	254	836	906	1,742
	Mode Split Reduction (28%)	-45	-27	-71	-235	-253	-487
	Pass-by (34% PM)	0	0	0	-219	-219	-437
	Net Trips	**113**	**70**	**183**	**383**	**435**	**818**
Elementary School	Trip Generation Equation or Average Rate	0.67			0.17		
ITE LUC 520	Directional Split	54%	46%	-	48%	52%	-
3625 Students	Gross Trips	1,310	1,120	2,430	295	320	615
	Mode Split Reduction (28%)	-365	-315	-680	-85	-90	-175
	Net Trips	**945**	**805**	**1,750**	**210**	**230**	**440**
High School	Trip Generation Equation or Average Rate	0.52			0.14		
ITE LUC 530	Directional Split	67%	33%	-	48%	52%	-
1500 Students	Gross Trips	523	257	780	101	109	210
	Mode Split Reduction (28%)	-146	-72	-218	-28	-31	-59
	Net Trips	**377**	**185**	**562**	**73**	**78**	**151**
District Park	Trip Generation Equation or Average Rate	0.02			T = 0.06(X) +22.6		
ITE LUC 411	Directional Split	-	-	-	-	-	-
30 Acres	Gross Trips	0	0	0	26	22	48
	Mode Split Reduction (28%)	0	0	0	0	0	0
	Net Trips	**0**	**0**	**0**	**26**	**22**	**48**
Total Non-Residential	**Net Trips**	**1,435**	**1,060**	**2,495**	**692**	**765**	**1,457**
Total Trips	**Net Trips**	**2,380**	**4,025**	**6,405**	**3,700**	**2,601**	**6,301**

Report for TAZ: **Trinison - Frontenac**

Mode Split Reduction: 28%

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing	Trip Generation Equation or Average Rate	Ln(T) = 0.91Ln(X) + 0.12			Ln(T) = 0.94Ln(X) + 0.27		
ITE LUC 210	Directional Split	25%	75%	-	63%	37%	-
435 Units	Gross Trips	82	244	326	271	161	432
	Mode Split Reduction (28%)	-23	-68	-91	-76	-46	-122
	Net Trips	**59**	**176**	**235**	**195**	**115**	**310**
Multi-family Housing (Low-rise)	Trip Generation Equation or Average Rate	T = 0.31(X) + 22.85			T = 0.43(X) + 20.55		
ITE LUC 220	Directional Split	24%	76%	-	63%	37%	-
855 Units	Gross Trips	97	305	402	309	181	490
	Mode Split Reduction (28%)	-26	-86	-112	-87	-50	-137
	Net Trips	**71**	**219**	**290**	**222**	**131**	**353**
Multi-family Housing (Mid-rise)	Trip Generation Equation or Average Rate	T = 0.44(X) - 11.61			T = 0.39(X) + 0.34		
ITE LUC 221	Directional Split	23%	77%	-	61%	39%	-
356 Units	Gross Trips	30	104	134	84	55	139
	Mode Split Reduction (28%)	-8	-29	-37	-24	-15	-39
	Net Trips	**22**	**75**	**97**	**60**	**40**	**100**
Multi-family Housing (High-rise)	Trip Generation Equation or Average Rate	T = 0.22(X) +18.85			T = 0.26(X) +23.12		
ITE LUC 222	Directional Split	26%	74%	-	62%	38%	-
701 Units	Gross Trips	45	128	173	127	78	205
	Mode Split Reduction (28%)	-13	-36	-49	-36	-22	-58
	Net Trips	**32**	**92**	**124**	**91**	**56**	**147**
Total Residential 2347 Units	**Net Trips**	**184**	**562**	**746**	**568**	**342**	**910**
Shopping Center	Trip Generation Equation or Average Rate	0.84			Ln(T) = 0.72Ln(X) + 3.02		
ITE LUC 820	Directional Split	62%	38%	-	48%	52%	-
116,000 sq.ft. GFA	Gross Trips	125	77	202	301	327	628
	Mode Split Reduction (28%)	-35	-22	-57	-84	-92	-176
	Pass-by (34% PM)	0	0	0	-74	-74	-148
	Net Trips	**90**	**55**	**145**	**143**	**161**	**304**
Elementary School	Trip Generation Equation or Average Rate	0.74			0.16		
ITE LUC 520	Directional Split	54%	46%	-	46%	54%	-
725 Students	Gross Trips	290	247	537	53	63	116
	Mode Split Reduction (28%)	-81	-69	-150	-15	-18	-33
	Net Trips	**209**	**178**	**387**	**38**	**45**	**83**
Total Non-Residential	**Net Trips**	**299**	**233**	**532**	**181**	**206**	**387**
Total Trips	**Net Trips**	**483**	**795**	**1,278**	**749**	**548**	**1,297**

Report for TAZ: **Mattamy - White Squadron**

Mode Split Reduction: 28%

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing	Trip Generation Equation or Average Rate	Ln(T) = 0.91Ln(X) + 0.12			Ln(T) = 0.94Ln(X) + 0.27		
ITE LUC 210	Directional Split	25%	75%	-	63%	37%	-
397 Units	Gross Trips	67	200	267	232	136	368
	Mode Split Reduction (28%)	-18	-56	-74	-64	-39	-103
	Net Trips	**49**	**144**	**193**	**168**	**97**	**265**
Multi-family Housing (Low-rise)	Trip Generation Equation or Average Rate	T = 0.31(X) + 22.85			T = 0.43(X) + 20.55		
ITE LUC 220	Directional Split	24%	76%	-	63%	37%	-
395 Units	Gross Trips	57	179	236	171	101	272
	Mode Split Reduction (28%)	-17	-51	-68	-48	-29	-77
	Net Trips	**40**	**128**	**168**	**123**	**72**	**195**
Multi-family Housing (Mid-rise)	Trip Generation Equation or Average Rate	T = 0.44(X) - 11.61			T = 0.39(X) + 0.34		
ITE LUC 221	Directional Split	23%	77%	-	61%	39%	-
50 Units	Gross Trips	2	8	10	12	8	20
	Mode Split Reduction (28%)	-1	-2	-3	-3	-2	-5
	Net Trips	**1**	**6**	**7**	**9**	**6**	**15**
Multi-family Housing (High-rise)	Trip Generation Equation or Average Rate	T = 0.22(X) +18.85			T = 0.26(X) +23.12		
ITE LUC 222	Directional Split	26%	74%	-	62%	38%	-
1371 Units	Gross Trips	89	251	340	250	153	403
	Mode Split Reduction (28%)	-25	-71	-96	-70	-43	-113
	Net Trips	**64**	**180**	**244**	**180**	**110**	**290**
Total Residential 2213 Units	**Net Trips**	**154**	**458**	**612**	**480**	**285**	**765**
Shopping Center	Trip Generation Equation or Average Rate	0.84			Ln(T) = 0.72Ln(X) + 3.02		
ITE LUC 820	Directional Split	62%	38%	-	48%	52%	-
66,000 sq.ft. GFA	Gross Trips	34	21	55	272	295	567
	Mode Split Reduction (28%)	-10	-5	-15	-76	-82	-158
	Pass-by (34% PM)	0	0	0	-66	-66	-132
	Net Trips	**24**	**16**	**40**	**130**	**147**	**277**
Elementary School	Trip Generation Equation or Average Rate	0.74			0.16		
ITE LUC 520	Directional Split	54%	46%	-	46%	54%	-
725 Students	Gross Trips	290	247	537	53	63	116
	Mode Split Reduction (28%)	-81	-69	-150	-15	-18	-33
	Net Trips	**209**	**178**	**387**	**38**	**45**	**83**
Total Non-Residential	**Net Trips**	**233**	**194**	**427**	**168**	**192**	**360**
Total Trips	**Net Trips**	**387**	**652**	**1,039**	**648**	**477**	**1,125**

Report for TAZ: **Remington**

Mode Split Reduction: 28%

Land Use	Parameter	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing	Trip Generation Equation or Average Rate	Ln(T) = 0.91Ln(X) + 0.12			Ln(T) = 0.94Ln(X) + 0.27		
ITE LUC 210	Directional Split	25%	75%	-	63%	37%	-
238 Units	Gross Trips	41	123	164	142	83	225
	Mode Split Reduction (28%)	-11	-34	-45	-40	-23	-63
	Net Trips	**30**	**89**	**119**	**102**	**60**	**162**
Multi-family Housing (Low-rise)	Trip Generation Equation or Average Rate	T = 0.31(X) + 22.85			T = 0.43(X) + 20.55		
ITE LUC 220	Directional Split	24%	76%	-	63%	37%	-
155 Units	Gross Trips	17	54	71	55	32	87
	Mode Split Reduction (28%)	-5	-15	-20	-15	-9	-24
	Net Trips	**12**	**39**	**51**	**40**	**23**	**63**
Multi-family Housing (Mid-rise)	Trip Generation Equation or Average Rate	T = 0.44(X) - 11.61			T = 0.39(X) + 0.34		
ITE LUC 221	Directional Split	23%	77%	-	61%	39%	-
332 Units	Gross Trips	29	96	125	79	51	130
	Mode Split Reduction (28%)	-8	-27	-35	-22	-15	-37
	Net Trips	**21**	**69**	**90**	**57**	**36**	**93**
Multi-family Housing (High-rise)	Trip Generation Equation or Average Rate	T = 0.22(X) +18.85			T = 0.26(X) +23.12		
ITE LUC 222	Directional Split	26%	74%	-	62%	38%	-
951 Units	Gross Trips	64	183	247	182	111	293
	Mode Split Reduction (28%)	-18	-51	-69	-51	-31	-82
	Net Trips	**46**	**132**	**178**	**131**	**80**	**211**
Total Residential 1676 Units	**Net Trips**	**109**	**329**	**438**	**330**	**199**	**529**
Elementary School	Trip Generation Equation or Average Rate	0.74			0.16		
ITE LUC 520	Directional Split	54%	46%	-	46%	54%	-
725 Students	Gross Trips	290	247	537	53	63	116
	Mode Split Reduction (28%)	-81	-69	-150	-15	-18	-33
	Net Trips	**209**	**178**	**387**	**38**	**45**	**83**
Total Non-Residential	**Net Trips**	**209**	**178**	**387**	**38**	**45**	**83**
Total Trips	**Net Trips**	**318**	**507**	**825**	**368**	**244**	**612**

Appendix G
Trip Distribution Calculation

4.2 Trip Distribution

Trip distribution for the Trafalgar Corridor development area for the 2031 horizon year was estimated using the origin-destination matrices from the Region's 2031 model run with the proposed densities outlined previously. Trip assignment was subsequently estimated for each TAZ based on potential access locations and the route providing the shortest travel time. The external trip distribution for the Trafalgar Corridor for Scenario A and Scenario B is summarized in **Table 4-7.**

Table 4-7: External Trip Distribution Summary

Location	Scenario A				Scenario B			
	AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Brampton-Caledon	2.80%	2.90%	2.90%	2.80%	2.60%	2.70%	2.70%	2.60%
York	3.50%	0.50%	0.50%	3.50%	3.70%	0.60%	0.60%	3.70%
Halton Hills	6.30%	13.20%	13.20%	6.30%	6.00%	13.40%	13.40%	6.00%
Oakville	5.90%	8.00%	8.00%	5.90%	6.30%	7.80%	7.80%	6.30%
Burlington South	3.90%	5.10%	5.10%	3.90%	3.70%	5.00%	5.00%	3.70%
Burlington North	0.90%	0.70%	0.70%	0.90%	0.70%	0.60%	0.60%	0.70%
Mississauga North-West	1.20%	1.70%	1.70%	1.20%	1.20%	1.60%	1.60%	1.20%
Mississauga Central-West	3.70%	2.90%	2.90%	3.70%	4.00%	2.80%	2.80%	4.00%
Mississauga South-West	0.80%	0.50%	0.50%	0.80%	0.80%	0.60%	0.60%	0.80%
Mississauga North-East	2.30%	2.20%	2.20%	2.30%	2.20%	2.30%	2.30%	2.20%
Mississauga Central-East	2.30%	1.40%	1.40%	2.30%	1.70%	1.60%	1.60%	1.70%
Mississauga South-East	0.20%	1.10%	1.10%	0.20%	0.00%	0.90%	0.90%	0.00%
Toronto South	1.60%	0.80%	0.80%	1.60%	1.40%	0.80%	0.80%	1.40%
Toronto North	1.00%	1.60%	1.60%	1.00%	0.80%	1.60%	1.60%	0.80%
Hamilton South	10.90%	1.60%	1.60%	10.90%	9.50%	1.60%	1.60%	9.50%
Hamilton North	4.30%	4.90%	4.90%	4.30%	3.60%	4.90%	4.90%	3.60%
Milton Downtown	17.00%	24.30%	24.30%	17.00%	18.50%	24.60%	24.60%	18.50%
Milton South	18.30%	14.60%	14.60%	18.30%	18.60%	14.50%	14.50%	18.60%
Milton North-West	13.10%	11.90%	11.90%	13.10%	14.80%	11.80%	11.80%	14.80%
Durham	0.00%	0.40%	0.40%	0.00%	0.00%	0.40%	0.40%	0.00%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

The external trip distribution obtained from the Region's EMME model illustrates that most of the trips inbound and outbound are contained within Milton, with the rest heavily destined to or originating from various municipalities within Halton Region.

The Region's EMME model was also used to extract the trip distribution between the zones within the Trafalgar Corridor. The interzonal and intrazonal trip distribution for the Trafalgar Corridor for Scenario A and Scenario B is summarized in **Table 4-8.**

Location	General Direction	Scenario A - Agerton Go Station			
		AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
Brampton-Caledon	NE	2.80%	2.90%	2.90%	2.80%
York	E	3.50%	0.50%	0.50%	3.50%
Halton Hills	N	6.30%	13.20%	13.20%	6.30%
Oakville	S	5.90%	8.00%	8.00%	5.90%
Burlington South	SW	3.90%	5.10%	5.10%	3.90%
Burlington North	SW	0.90%	0.70%	0.70%	0.90%
Mississauga North-West	E	1.20%	1.70%	1.70%	1.20%
Mississauga Central-West	E	3.70%	2.90%	2.90%	3.70%
Mississauga South-West	SE	0.80%	0.50%	0.50%	0.80%
Mississauga North-East	E	2.30%	2.20%	2.20%	2.30%
Mississauga Central-East	E	2.30%	1.40%	1.40%	2.30%
Mississauga South-East	SE	0.20%	1.10%	1.10%	0.20%
Toronto South	SE	1.60%	0.80%	0.80%	1.60%
Toronto North	E	1.00%	1.60%	1.60%	1.00%
Hamilton South	SW	10.90%	1.60%	1.60%	10.90%
Hamilton North	SW	4.30%	4.90%	4.90%	4.30%
Milton Downtown	NW	17.00%	24.30%	24.30%	17.00%
Milton South	W	18.30%	14.60%	14.60%	18.30%
Milton North-West	NW	13.10%	11.90%	11.90%	13.10%
Durham	NE	0.00%	0.40%	0.40%	0.00%
Total		**100.00%**	**100.30%**	**100.30%**	**100.00%**

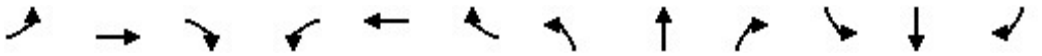
0.033% Modification to apply to all movements to account for rounding errors in TMP Summary table (100.30% total previously)

Direction		AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
N	via Trafalgar NB	6.30%	13.17%	13.17%	6.30%
	via Hwy 401	15.44%	13.58%	13.58%	15.44%
S	via Trafalgar SB	15.28%	14.47%	14.47%	15.28%
E	via Derry EB	5.25%	4.12%	4.12%	5.25%
	via Britannia EB	8.45%	6.52%	6.52%	8.45%
	via LBL EB	5.39%	4.12%	4.12%	5.39%
W	via Derry WB	13.60%	15.26%	15.26%	13.60%
	via Britannia WB	28.53%	26.87%	26.87%	28.53%
	via LBL WB	1.77%	1.91%	1.91%	1.77%
	Total	**100%**	**100%**	**100%**	**100%**

Overall Directional Distribution				
	AM IN	AM OUT	PM IN	PM OUT
N	21.74%	26.74%	26.74%	21.74%
S	15.28%	14.47%	14.47%	15.28%
E	19.09%	14.75%	14.75%	19.09%
W	43.89%	44.04%	44.04%	43.89%
Total	100.00%	100.00%	100.00%	100.00%

			AM (IN)	AM (OUT)	PM (IN)	PM (OUT)
1	Trafalgar Road to/from north		21.74%	26.74%	26.74%	21.74%
2	Eighth Line to/from north		0.00%	0.00%	0.00%	0.00%
3	Derry Road to/from east		5.25%	4.12%	4.12%	5.25%
4	Britannia Road to/from east		8.45%	6.52%	6.52%	8.45%
5	Lower Baseline to/from east		5.39%	4.12%	4.12%	5.39%
6	Trafalgar Road to/from south		15.28%	14.47%	14.47%	15.28%
7	Lower Baseline to/from west		1.77%	1.91%	1.91%	1.77%
8	Britannia Road to/from west		28.53%	26.87%	26.87%	28.53%
9	Derry Road to/from west		13.60%	15.26%	15.26%	13.60%
		Total	100.00%	100.00%	100.00%	100.00%

Appendix H
Baseline SYNCHRO Capacity and Queuing Analysis Reports

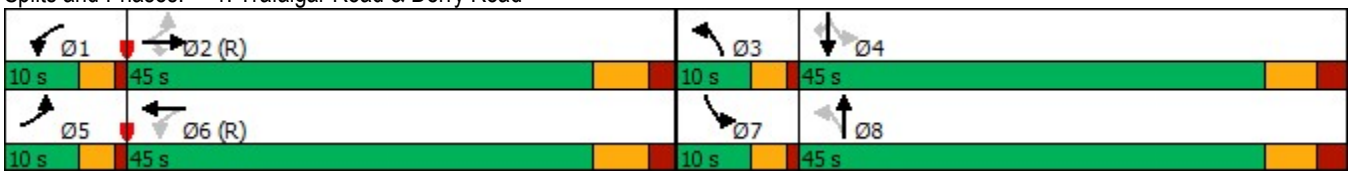


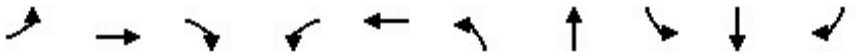
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	514	1349	184	65	483	104	60	405	74	43	294	47
Future Volume (vph)	514	1349	184	65	483	104	60	405	74	43	294	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		85.0	100.0		0.0	100.0		0.0	85.0		85.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	100.0			50.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.973			0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1772	3579	1570	1825	3438	0	1706	3314	0	1825	3230	944
Flt Permitted	0.275			0.104			0.485			0.291		
Satd. Flow (perm)	513	3579	1570	200	3438	0	871	3314	0	559	3230	944
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			163		26			22				118
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		227.5			1340.7			2992.0			623.5	
Travel Time (s)		10.2			60.3			179.5			37.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	2%	4%	0%	4%	0%	7%	9%	0%	0%	13%	73%
Adj. Flow (vph)	547	1435	196	69	514	111	64	431	79	46	313	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	547	1435	196	69	625	0	64	510	0	46	313	50
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	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	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	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	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	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	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8			4		4
Detector Phase	5	2	2	1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	6.0	10.0	10.0	6.0	10.0		6.0	20.0		6.0	20.0	20.0
Minimum Split (s)	10.0	37.9	37.9	10.0	37.9		10.0	36.8		10.0	36.8	36.8
Total Split (s)	10.0	45.0	45.0	10.0	45.0		10.0	45.0		10.0	45.0	45.0
Total Split (%)	9.1%	40.9%	40.9%	9.1%	40.9%		9.1%	40.9%		9.1%	40.9%	40.9%
Maximum Green (s)	6.0	38.1	38.1	6.0	38.1		6.0	38.2		6.0	38.2	38.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6		3.0	4.2		3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3		1.0	2.6		1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0		-1.0	-2.0		-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9		3.0	4.8		3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None		None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0			23.0			23.0	23.0
Pedestrian Calls (#/hr)		0	0		0			0			0	0
Act Effct Green (s)	66.8	54.2	54.2	52.3	40.1		34.5	27.1		34.5	27.1	27.1
Actuated g/C Ratio	0.61	0.49	0.49	0.48	0.36		0.31	0.25		0.31	0.25	0.25
v/c Ratio	0.97	0.81	0.23	0.28	0.49		0.20	0.61		0.18	0.39	0.16
Control Delay	51.3	31.3	5.9	14.4	27.5		24.1	38.0		23.7	35.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	51.3	31.3	5.9	14.4	27.5		24.1	38.0		23.7	35.4	1.0
LOS	D	C	A	B	C		C	D		C	D	A
Approach Delay		34.0			26.2			36.4			29.9	
Approach LOS		C			C			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 32.5		Intersection LOS: C	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Trafalgar Road & Derry Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	547	1435	196	69	625	64	510	46	313	50
v/c Ratio	0.97	0.81	0.23	0.28	0.49	0.20	0.61	0.18	0.39	0.16
Control Delay	51.3	31.3	5.9	14.4	27.5	24.1	38.0	23.7	35.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	31.3	5.9	14.4	27.5	24.1	38.0	23.7	35.4	1.0
Queue Length 50th (m)	~76.8	143.7	3.9	5.9	51.7	9.1	49.1	6.5	29.6	0.0
Queue Length 95th (m)	#167.9	#220.0	19.0	13.5	68.3	16.8	61.4	13.1	39.1	0.0
Internal Link Dist (m)		203.5			1316.7		2968.0		599.5	
Turn Bay Length (m)	110.0		85.0	100.0		100.0		85.0		85.0
Base Capacity (vph)	564	1762	855	247	1269	326	1225	256	1180	419
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.81	0.23	0.28	0.49	0.20	0.42	0.18	0.27	0.12

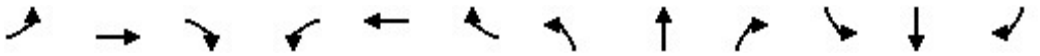
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	514	1349	184	65	483	104	60	405	74	43	294	47
Future Volume (vph)	514	1349	184	65	483	104	60	405	74	43	294	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9		3.0	4.8		3.0	4.8	4.8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1772	3579	1570	1825	3440		1706	3313		1825	3230	944
Flt Permitted	0.28	1.00	1.00	0.10	1.00		0.49	1.00		0.29	1.00	1.00
Satd. Flow (perm)	513	3579	1570	201	3440		871	3313		559	3230	944
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	547	1435	196	69	514	111	64	431	79	46	313	50
RTOR Reduction (vph)	0	0	85	0	17	0	0	17	0	0	0	38
Lane Group Flow (vph)	547	1435	111	69	608	0	64	493	0	46	313	12
Heavy Vehicles (%)	3%	2%	4%	0%	4%	0%	7%	9%	0%	0%	13%	73%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		4
Actuated Green, G (s)	62.4	50.6	50.6	45.1	37.3		29.9	25.1		29.9	25.1	25.1
Effective Green, g (s)	63.4	52.6	52.6	47.1	39.3		31.9	27.1		31.9	27.1	27.1
Actuated g/C Ratio	0.58	0.48	0.48	0.43	0.36		0.29	0.25		0.29	0.25	0.25
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9		4.0	6.8		4.0	6.8	6.8
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	548	1711	750	215	1229		296	816		228	795	232
v/s Ratio Prot	c0.20	0.40		0.03	0.18		c0.01	c0.15		0.01	0.10	
v/s Ratio Perm	c0.37		0.07	0.11			0.05			0.05		0.01
v/c Ratio	1.00	0.84	0.15	0.32	0.49		0.22	0.60		0.20	0.39	0.05
Uniform Delay, d1	18.8	25.0	16.1	21.5	27.6		28.9	36.7		28.9	34.6	31.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	37.8	5.1	0.4	1.8	1.4		0.8	1.9		0.9	0.7	0.2
Delay (s)	56.6	30.1	16.5	23.4	29.0		29.6	38.6		29.8	35.3	31.9
Level of Service	E	C	B	C	C		C	D		C	D	C
Approach Delay (s)		35.5			28.5			37.6			34.2	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



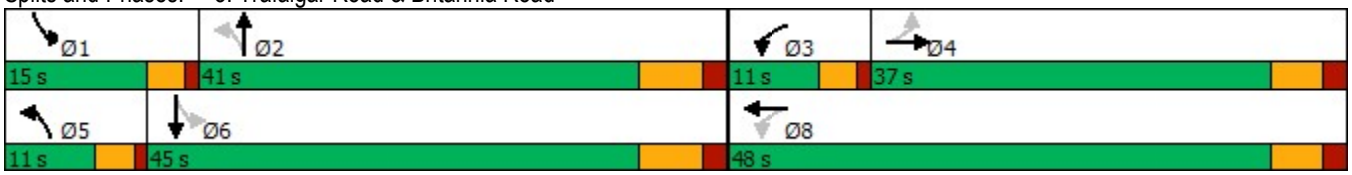
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	468	288	127	264	51	135	664	150	74	723	22
Future Volume (vph)	44	468	288	127	264	51	135	664	150	74	723	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	215.0		0.0	100.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			50.0			50.0		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.943			0.976			0.972			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1706	4849	0	1825	4913	0	1772	3382	0	1789	3435	0
Flt Permitted	0.544			0.193			0.254			0.227		
Satd. Flow (perm)	977	4849	0	371	4913	0	474	3382	0	428	3435	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		152			46			28			3	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		77.0			86.0			3180.7			2992.0	
Travel Time (s)		4.6			5.2			190.8			179.5	
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 (%)	7%	2%	2%	0%	5%	0%	3%	6%	0%	2%	6%	0%
Adj. Flow (vph)	46	493	303	134	278	54	142	699	158	78	761	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	796	0	134	332	0	142	857	0	78	784	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		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	

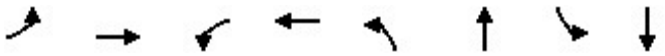
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		7.0	15.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	42.0	42.0		11.0	42.0		11.0	40.0		11.0	40.0	
Total Split (s)	37.0	37.0		11.0	48.0		11.0	41.0		15.0	45.0	
Total Split (%)	35.6%	35.6%		10.6%	46.2%		10.6%	39.4%		14.4%	43.3%	
Maximum Green (s)	31.0	31.0		7.0	42.0		7.0	34.0		11.0	38.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	5.0		3.0	5.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
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		4.0	6.0		4.0	7.0		4.0	7.0	
Lead/Lag	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0			7.0			7.0			7.0	
Flash Dont Walk (s)	29.0	29.0			29.0			26.0			26.0	
Pedestrian Calls (#/hr)	0	0			0			0			0	
Act Effct Green (s)	24.5	24.5		37.5	35.5		48.0	39.5		49.1	38.1	
Actuated g/C Ratio	0.25	0.25		0.38	0.36		0.49	0.40		0.50	0.39	
v/c Ratio	0.19	0.60		0.54	0.18		0.44	0.62		0.24	0.58	
Control Delay	30.1	27.5		28.3	18.0		17.5	26.6		14.3	26.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.1	27.5		28.3	18.0		17.5	26.6		14.3	26.4	
LOS	C	C		C	B		B	C		B	C	
Approach Delay		27.6			21.0			25.4			25.3	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 104
Actuated Cycle Length: 97.7
Natural Cycle: 105
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 25.3 — Intersection LOS: C
Intersection Capacity Utilization 73.1% — ICU Level of Service D
Analysis Period (min) 15

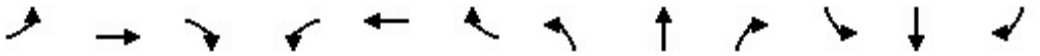
Splits and Phases: 3: Trafalgar Road & Britannia Road





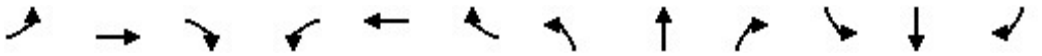
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	796	134	332	142	857	78	784
v/c Ratio	0.19	0.60	0.54	0.18	0.44	0.62	0.24	0.58
Control Delay	30.1	27.5	28.3	18.0	17.5	26.6	14.3	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	27.5	28.3	18.0	17.5	26.6	14.3	26.4
Queue Length 50th (m)	6.8	39.0	16.5	13.1	13.2	67.6	7.0	61.1
Queue Length 95th (m)	15.9	51.5	28.7	19.4	25.8	100.0	15.6	87.2
Internal Link Dist (m)		53.0		62.0		3156.7		2968.0
Turn Bay Length (m)	120.0		215.0		100.0		100.0	
Base Capacity (vph)	310	1646	246	2143	326	1384	382	1341
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	0.15	0.48	0.54	0.15	0.44	0.62	0.20	0.58

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	468	288	127	264	51	135	664	150	74	723	22
Future Volume (vph)	44	468	288	127	264	51	135	664	150	74	723	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	6.0		4.0	7.0		4.0	7.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.98		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1706	4848		1825	4911		1772	3384		1789	3434	
Flt Permitted	0.54	1.00		0.19	1.00		0.25	1.00		0.23	1.00	
Satd. Flow (perm)	976	4848		370	4911		474	3384		427	3434	
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)	46	493	303	134	278	54	142	699	158	78	761	23
RTOR Reduction (vph)	0	114	0	0	29	0	0	17	0	0	2	0
Lane Group Flow (vph)	46	682	0	134	303	0	142	840	0	78	782	0
Heavy Vehicles (%)	7%	2%	2%	0%	5%	0%	3%	6%	0%	2%	6%	0%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.5	24.5		35.5	35.5		46.5	39.5		45.5	39.0	
Effective Green, g (s)	24.5	24.5		35.5	35.5		46.5	39.5		45.5	39.0	
Actuated g/C Ratio	0.25	0.25		0.36	0.36		0.47	0.40		0.46	0.40	
Clearance Time (s)	6.0	6.0		4.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	242	1205		236	1769		316	1357		287	1359	
v/s Ratio Prot		0.14		c0.04	0.06		c0.03	c0.25		0.02	0.23	
v/s Ratio Perm	0.05			c0.16			0.18			0.11		
v/c Ratio	0.19	0.57		0.57	0.17		0.45	0.62		0.27	0.58	
Uniform Delay, d1	29.2	32.3		22.7	21.5		15.7	23.5		15.8	23.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	1.0		3.1	0.1		1.0	2.1		0.5	1.8	
Delay (s)	30.0	33.4		25.8	21.6		16.8	25.6		16.3	25.1	
Level of Service	C	C		C	C		B	C		B	C	
Approach Delay (s)		33.2			22.8			24.4			24.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	21.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



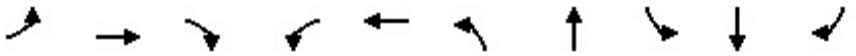
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	651	110	69	1157	99	121	597	49	106	318	115
Future Volume (vph)	171	651	110	69	1157	99	121	597	49	106	318	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0		85.0	100.0		0.0	100.0		0.0	85.0		85.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	100.0			50.0			50.0			50.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.988			0.989				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1560	3544	1601	1772	3573	0	1789	3481	0	1807	3544	1420
Flt Permitted	0.080			0.320			0.426			0.204		
Satd. Flow (perm)	131	3544	1601	597	3573	0	802	3481	0	388	3544	1420
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138		8			7				139
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		227.5			1340.7			2992.0			623.5	
Travel Time (s)		10.2			60.3			179.5			37.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	17%	3%	2%	3%	1%	0%	2%	4%	0%	1%	3%	15%
Adj. Flow (vph)	182	693	117	73	1231	105	129	635	52	113	338	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	693	117	73	1336	0	129	687	0	113	338	122
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	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	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	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	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	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	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	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	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8			4		4
Detector Phase	5	2	2	1	6		3	8		7	4	4
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0		7.0	20.0		7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9		11.0	36.8		11.0	36.8	36.8
Total Split (s)	15.0	50.0	50.0	15.0	50.0		20.0	45.0		15.0	40.0	40.0
Total Split (%)	12.0%	40.0%	40.0%	12.0%	40.0%		16.0%	36.0%		12.0%	32.0%	32.0%
Maximum Green (s)	11.0	43.1	43.1	11.0	43.1		16.0	38.2		11.0	33.2	33.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6		3.0	4.2		3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3		1.0	2.6		1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0		-1.0	-2.0		-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9		3.0	4.8		3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None		None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0			7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0			23.0			23.0	23.0
Pedestrian Calls (#/hr)		0	0		0			0			0	0
Act Effct Green (s)	66.1	53.7	53.7	60.4	47.7		50.9	35.5		46.6	33.1	33.1
Actuated g/C Ratio	0.53	0.43	0.43	0.48	0.38		0.41	0.28		0.37	0.26	0.26
v/c Ratio	0.78	0.46	0.15	0.19	0.98		0.30	0.69		0.41	0.36	0.26
Control Delay	51.8	28.3	3.2	16.7	57.8		23.9	43.1		26.5	38.2	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	51.8	28.3	3.2	16.7	57.8		23.9	43.1		26.5	38.2	5.3
LOS	D	C	A	B	E		C	D		C	D	A
Approach Delay		29.7			55.7			40.0			28.9	
Approach LOS		C			E			D			C	

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 41.5 Intersection LOS: D
Intersection Capacity Utilization 83.3% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Trafalgar Road & Derry Road

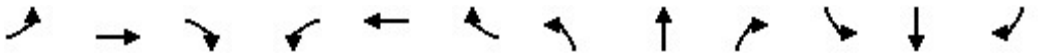


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	182	693	117	73	1336	129	687	113	338	122
v/c Ratio	0.78	0.46	0.15	0.19	0.98	0.30	0.69	0.41	0.36	0.26
Control Delay	51.8	28.3	3.2	16.7	57.8	23.9	43.1	26.5	38.2	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	28.3	3.2	16.7	57.8	23.9	43.1	26.5	38.2	5.3
Queue Length 50th (m)	29.2	66.2	0.0	8.6	~184.7	19.3	77.7	16.7	35.1	0.0
Queue Length 95th (m)	#75.3	89.4	8.6	17.3	#227.6	30.5	94.0	27.2	48.0	10.9
Internal Link Dist (m)		203.5			1316.7		2968.0		599.5	
Turn Bay Length (m)	110.0		85.0	100.0		100.0		85.0		85.0
Base Capacity (vph)	234	1523	767	406	1368	467	1124	281	998	499
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.46	0.15	0.18	0.98	0.28	0.61	0.40	0.34	0.24

Intersection Summary

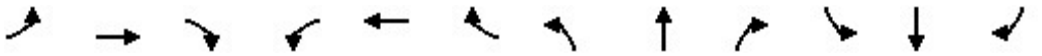
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	651	110	69	1157	99	121	597	49	106	318	115
Future Volume (vph)	171	651	110	69	1157	99	121	597	49	106	318	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9		3.0	4.8		3.0	4.8	4.8
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1560	3544	1601	1772	3574		1789	3480		1807	3544	1420
Flt Permitted	0.08	1.00	1.00	0.32	1.00		0.43	1.00		0.20	1.00	1.00
Satd. Flow (perm)	132	3544	1601	596	3574		803	3480		389	3544	1420
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	182	693	117	73	1231	105	129	635	52	113	338	122
RTOR Reduction (vph)	0	0	67	0	5	0	0	5	0	0	0	90
Lane Group Flow (vph)	182	693	50	73	1331	0	129	682	0	113	338	32
Heavy Vehicles (%)	17%	3%	2%	3%	1%	0%	2%	4%	0%	1%	3%	15%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		4
Actuated Green, G (s)	63.1	50.9	50.9	53.9	45.7		46.6	33.5		41.8	31.1	31.1
Effective Green, g (s)	64.1	52.9	52.9	55.9	47.7		48.6	35.5		43.8	33.1	33.1
Actuated g/C Ratio	0.51	0.42	0.42	0.45	0.38		0.39	0.28		0.35	0.26	0.26
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9		4.0	6.8		4.0	6.8	6.8
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	232	1499	677	353	1363		423	988		269	938	376
v/s Ratio Prot	c0.09	0.20		0.02	c0.37		c0.03	c0.20		c0.04	0.10	
v/s Ratio Perm	0.31		0.03	0.08			0.08			0.11		0.02
v/c Ratio	0.78	0.46	0.07	0.21	0.98		0.30	0.69		0.42	0.36	0.09
Uniform Delay, d1	33.7	25.9	21.5	20.2	38.1		25.4	39.9		29.2	37.3	34.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	18.1	1.0	0.2	0.6	19.4		0.9	2.7		2.2	0.5	0.2
Delay (s)	51.8	26.9	21.7	20.8	57.5		26.3	42.5		31.4	37.8	34.8
Level of Service	D	C	C	C	E		C	D		C	D	C
Approach Delay (s)		30.8			55.6			39.9			35.9	
Approach LOS		C			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

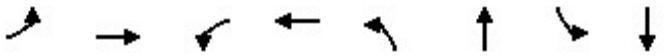


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	425	202	123	588	66	329	907	163	70	573	49
Future Volume (vph)	66	425	202	123	588	66	329	907	163	70	573	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	120.0		0.0	215.0		0.0	100.0		0.0	100.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	30.0			30.0			50.0			50.0		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.952			0.985			0.977			0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	4911	0	1825	5110	0	1772	3507	0	1772	3470	0
Flt Permitted	0.379			0.210			0.286			0.184		
Satd. Flow (perm)	700	4911	0	403	5110	0	533	3507	0	343	3470	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92			17			21			8	
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		77.0			86.0			3180.7			2992.0	
Travel Time (s)		4.6			5.2			190.8			179.5	
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%	1%	0%	1%	2%	3%	2%	0%	3%	4%	3%
Adj. Flow (vph)	69	447	213	129	619	69	346	955	172	74	603	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	69	660	0	129	688	0	346	1127	0	74	655	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		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	15.0	15.0		7.0	15.0		7.0	25.0		7.0	25.0	
Minimum Split (s)	42.0	42.0		11.0	42.0		11.0	40.0		11.0	40.0	
Total Split (s)	40.0	40.0		15.0	55.0		25.0	64.0		11.0	50.0	
Total Split (%)	30.8%	30.8%		11.5%	42.3%		19.2%	49.2%		8.5%	38.5%	
Maximum Green (s)	34.0	34.0		11.0	49.0		21.0	57.0		7.0	43.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	5.0		3.0	5.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	-1.0	-2.0		-1.0	-2.0		-1.0	-2.0		-1.0	-2.0	
Total Lost Time (s)	5.0	4.0		3.0	4.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lag	Lag		Lead			Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)	7.0	7.0			7.0			7.0			7.0	
Flash Dont Walk (s)	29.0	29.0			29.0			26.0			26.0	
Pedestrian Calls (#/hr)	0	0			0			0			0	
Act Effct Green (s)	25.8	26.8		41.8	40.8		70.3	59.8		57.6	47.6	
Actuated g/C Ratio	0.22	0.23		0.35	0.35		0.59	0.51		0.49	0.40	
v/c Ratio	0.45	0.56		0.47	0.39		0.69	0.63		0.28	0.47	
Control Delay	51.2	36.5		32.3	29.0		20.8	24.4		15.6	28.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	51.2	36.5		32.3	29.0		20.8	24.4		15.6	28.6	
LOS	D	D		C	C		C	C		B	C	
Approach Delay		37.9			29.5			23.6			27.3	
Approach LOS		D			C			C			C	

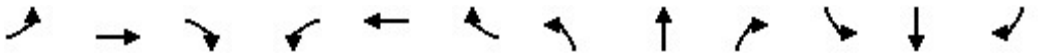
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 118.2			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Trafalgar Road & Britannia Road



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	69	660	129	688	346	1127	74	655
v/c Ratio	0.45	0.56	0.47	0.39	0.69	0.63	0.28	0.47
Control Delay	51.2	36.5	32.3	29.0	20.8	24.4	15.6	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	36.5	32.3	29.0	20.8	24.4	15.6	28.6
Queue Length 50th (m)	14.4	44.1	21.1	43.6	38.7	100.5	6.9	58.2
Queue Length 95th (m)	29.2	56.5	35.0	54.2	67.3	142.3	15.8	88.7
Internal Link Dist (m)		53.0		62.0		3156.7		2968.0
Turn Bay Length (m)	120.0		215.0		100.0		100.0	
Base Capacity (vph)	209	1570	287	2231	549	1784	265	1401
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	0.33	0.42	0.45	0.31	0.63	0.63	0.28	0.47

Intersection Summary

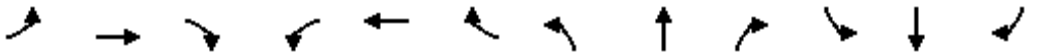


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	425	202	123	588	66	329	907	163	70	573	49
Future Volume (vph)	66	425	202	123	588	66	329	907	163	70	573	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0		3.0	4.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.98		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	4908		1825	5110		1772	3507		1772	3471	
Flt Permitted	0.38	1.00		0.21	1.00		0.29	1.00		0.18	1.00	
Satd. Flow (perm)	699	4908		403	5110		533	3507		344	3471	
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)	69	447	213	129	619	69	346	955	172	74	603	52
RTOR Reduction (vph)	0	71	0	0	11	0	0	10	0	0	5	0
Lane Group Flow (vph)	69	589	0	129	677	0	346	1117	0	74	650	0
Heavy Vehicles (%)	4%	2%	1%	0%	1%	2%	3%	2%	0%	3%	4%	3%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.8	24.8		38.8	38.8		67.2	57.8		51.9	46.5	
Effective Green, g (s)	25.8	26.8		39.8	40.8		68.2	59.8		53.9	48.5	
Actuated g/C Ratio	0.22	0.23		0.33	0.34		0.57	0.50		0.45	0.41	
Clearance Time (s)	6.0	6.0		4.0	6.0		4.0	7.0		4.0	7.0	
Vehicle Extension (s)	5.0	5.0		3.0	5.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	151	1105		266	1752		489	1762		232	1414	
v/s Ratio Prot		c0.12		c0.04	0.13		c0.11	0.32		0.02	0.19	
v/s Ratio Perm	0.10			0.12			c0.30			0.13		
v/c Ratio	0.46	0.53		0.48	0.39		0.71	0.63		0.32	0.46	
Uniform Delay, d1	40.5	40.6		29.3	29.6		15.2	21.6		19.4	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5	0.9		1.4	0.3		4.6	1.7		0.8	1.1	
Delay (s)	45.0	41.5		30.7	29.9		19.8	23.4		20.2	26.8	
Level of Service	D	D		C	C		B	C		C	C	
Approach Delay (s)		41.8			30.0			22.5			26.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	119.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Appendix I
Future Background SYNCHRO Capacity and Queuing Analysis Reports

2031 Future Background



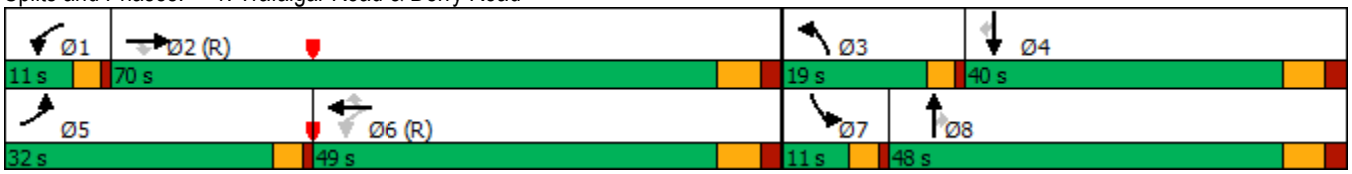
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
Future Volume (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3437	4520	1570	1825	4433	1633	3309	4230	1633	3541	4080	944
Flt Permitted	0.950			0.085			0.950			0.950		
Satd. Flow (perm)	3437	4520	1570	163	4433	1633	3309	4230	1633	3541	4080	944
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			222			154			124			155
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	4%	0%	4%	0%	7%	9%	0%	0%	13%	73%
Adj. Flow (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

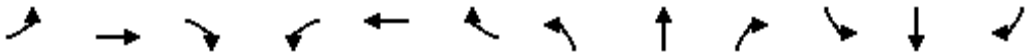
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	32.0	70.0	70.0	11.0	49.0	49.0	19.0	48.0	48.0	11.0	40.0	40.0
Total Split (%)	22.9%	50.0%	50.0%	7.9%	35.0%	35.0%	13.6%	34.3%	34.3%	7.9%	28.6%	28.6%
Maximum Green (s)	28.0	63.1	63.1	7.0	42.1	42.1	15.0	41.2	41.2	7.0	33.2	33.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	26.2	68.2	68.2	57.9	47.9	47.9	15.5	42.3	42.3	8.0	34.7	34.7
Actuated g/C Ratio	0.19	0.49	0.49	0.41	0.34	0.34	0.11	0.30	0.30	0.06	0.25	0.25
v/c Ratio	0.80	0.76	0.25	0.40	0.49	0.59	0.61	0.77	0.13	0.51	0.52	0.13
Control Delay	71.7	30.1	5.0	29.7	39.0	28.1	88.3	50.5	12.7	73.5	47.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	30.1	5.0	29.7	39.0	28.1	88.3	50.5	12.7	73.5	47.5	0.8
LOS	E	C	A	C	D	C	F	D	B	E	D	A
Approach Delay		36.7			34.9			54.8			48.3	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 41.9		Intersection LOS: D	
Intersection Capacity Utilization 77.6%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

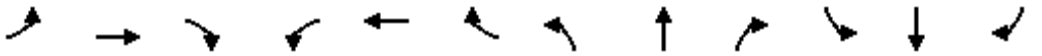
Splits and Phases: 1: Trafalgar Road & Derry Road





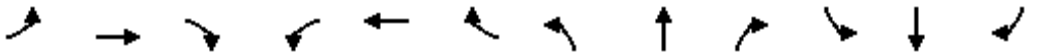
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
v/c Ratio	0.80	0.76	0.25	0.40	0.49	0.59	0.61	0.77	0.13	0.51	0.52	0.13
Control Delay	71.7	30.1	5.0	29.7	39.0	28.1	88.3	50.5	12.7	73.5	47.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	30.1	5.0	29.7	39.0	28.1	88.3	50.5	12.7	73.5	47.5	0.8
Queue Length 50th (m)	78.2	107.9	0.0	8.4	74.6	62.5	34.0	67.8	3.6	14.6	52.7	0.0
Queue Length 95th (m)	96.4	135.0	21.3	17.4	95.2	101.8	47.7	107.1	17.2	24.4	66.9	0.0
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	711	2202	878	164	1515	659	378	1305	589	202	1025	353
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.76	0.25	0.40	0.49	0.59	0.60	0.75	0.13	0.51	0.52	0.13

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
Future Volume (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3437	4520	1570	1825	4433	1633	3309	4230	1633	3541	4080	944
Flt Permitted	0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3437	4520	1570	164	4433	1633	3309	4230	1633	3541	4080	944
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	514	1670	222	65	748	390	225	977	78	104	528	47
RTOR Reduction (vph)	0	0	115	0	0	101	0	0	54	0	0	35
Lane Group Flow (vph)	514	1670	107	65	748	289	225	977	24	104	528	12
Heavy Vehicles (%)	3%	2%	4%	0%	4%	0%	7%	9%	0%	0%	13%	73%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	25.2	65.4	65.4	51.4	45.8	45.8	14.5	40.3	40.3	7.0	32.8	32.8
Effective Green, g (s)	26.2	67.4	67.4	53.4	47.8	47.8	15.5	42.3	42.3	8.0	34.8	34.8
Actuated g/C Ratio	0.19	0.48	0.48	0.38	0.34	0.34	0.11	0.30	0.30	0.06	0.25	0.25
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	643	2176	755	140	1513	557	366	1278	493	202	1014	234
v/s Ratio Prot	c0.15	c0.37		0.02	0.17		c0.07	c0.23		0.03	0.13	
v/s Ratio Perm			0.07	0.15		0.18			0.01			0.01
v/c Ratio	0.80	0.77	0.14	0.46	0.49	0.52	0.61	0.76	0.05	0.51	0.52	0.05
Uniform Delay, d1	54.4	29.9	20.2	29.8	36.5	36.9	59.4	44.3	34.6	64.1	45.4	40.0
Progression Factor	1.19	0.94	1.72	1.15	1.01	1.04	1.37	1.05	12.87	1.00	1.00	1.00
Incremental Delay, d2	4.9	1.9	0.3	4.9	1.1	3.3	3.9	2.9	0.1	4.4	0.9	0.2
Delay (s)	69.5	29.9	35.1	39.2	38.1	41.7	85.3	49.3	445.1	68.5	46.3	40.2
Level of Service	E	C	D	D	D	D	F	D	F	E	D	D
Approach Delay (s)		38.8			39.3			79.7			49.3	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



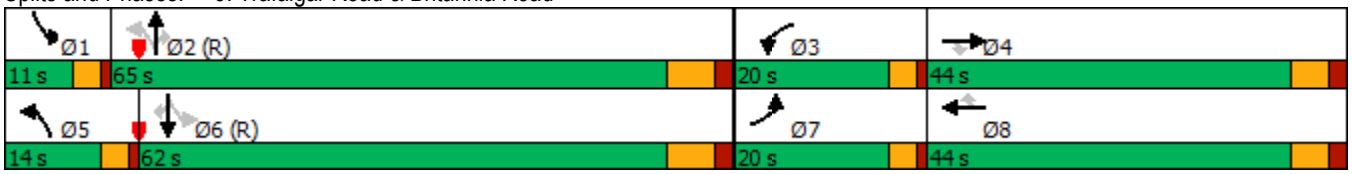
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
Future Volume (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3309	4520	1601	3541	4391	1633	1772	4350	1633	1789	4350	1633
Flt Permitted	0.950			0.950			0.128			0.184		
Satd. Flow (perm)	3309	4520	1601	3541	4391	1633	239	4350	1633	347	4350	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			150			161			169			339
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	2%	2%	0%	5%	0%	3%	6%	0%	2%	6%	0%
Adj. Flow (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
Shared Lane Traffic (%)												
Lane Group Flow (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
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)		7.4			7.4			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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

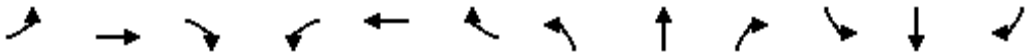
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	14.0	65.0	65.0	11.0	62.0	62.0
Total Split (%)	14.3%	31.4%	31.4%	14.3%	31.4%	31.4%	10.0%	46.4%	46.4%	7.9%	44.3%	44.3%
Maximum Green (s)	16.0	38.0	38.0	16.0	38.0	38.0	10.0	58.0	58.0	7.0	55.0	55.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	14.2	37.0	37.0	13.2	36.0	36.0	78.8	65.7	65.7	74.9	63.8	63.8
Actuated g/C Ratio	0.10	0.26	0.26	0.09	0.26	0.26	0.56	0.47	0.47	0.54	0.46	0.46
v/c Ratio	0.57	0.60	0.56	0.52	0.62	0.35	0.62	0.48	0.20	0.47	0.57	0.43
Control Delay	66.7	46.8	25.3	80.2	40.4	10.7	41.6	12.1	0.7	23.2	31.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.7	46.8	25.3	80.2	40.4	10.7	41.6	12.1	0.7	23.2	31.5	8.9
LOS	E	D	C	F	D	B	D	B	A	C	C	A
Approach Delay		44.6			41.5			14.2			25.4	
Approach LOS		D			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 50 (36%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 30.3		Intersection LOS: C	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road

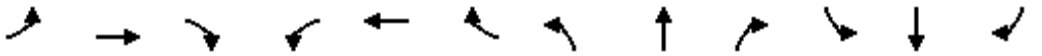




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
v/c Ratio	0.57	0.60	0.56	0.52	0.62	0.35	0.62	0.48	0.20	0.47	0.57	0.43
Control Delay	66.7	46.8	25.3	80.2	40.4	10.7	41.6	12.1	0.7	23.2	31.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.7	46.8	25.3	80.2	40.4	10.7	41.6	12.1	0.7	23.2	31.5	8.9
Queue Length 50th (m)	26.5	71.2	35.2	25.1	65.6	3.7	12.4	60.4	0.1	12.9	114.4	5.2
Queue Length 95th (m)	38.5	85.0	63.6	m35.7	78.0	m17.6	43.9	38.5	0.4	32.6	150.5	62.9
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	401	1306	569	429	1257	582	260	2041	856	279	1981	928
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.55	0.53	0.40	0.56	0.33	0.61	0.48	0.20	0.47	0.57	0.43

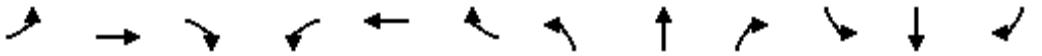
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
Future Volume (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3309	4520	1601	3541	4391	1633	1772	4350	1633	1789	4350	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)	3309	4520	1601	3541	4391	1633	239	4350	1633	347	4350	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	192	713	301	173	699	191	159	985	169	130	1130	403
RTOR Reduction (vph)	0	0	110	0	0	120	0	0	90	0	0	185
Lane Group Flow (vph)	192	713	191	173	699	71	159	985	79	130	1130	218
Heavy Vehicles (%)	7%	2%	2%	0%	5%	0%	3%	6%	0%	2%	6%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		6
Actuated Green, G (s)	13.2	35.0	35.0	12.2	34.0	34.0	73.8	63.7	63.7	69.8	61.7	61.7
Effective Green, g (s)	14.2	37.0	37.0	13.2	36.0	36.0	75.8	65.7	65.7	71.8	63.7	63.7
Actuated g/C Ratio	0.10	0.26	0.26	0.09	0.26	0.26	0.54	0.47	0.47	0.51	0.46	0.46
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	335	1194	423	333	1129	419	250	2041	766	271	1979	743
v/s Ratio Prot	c0.06	0.16		0.05	c0.16		c0.05	0.23		0.03	0.26	
v/s Ratio Perm			0.12			0.04	c0.29		0.05	0.21		0.13
v/c Ratio	0.57	0.60	0.45	0.52	0.62	0.17	0.64	0.48	0.10	0.48	0.57	0.29
Uniform Delay, d1	60.0	45.0	43.0	60.4	45.9	40.4	19.7	25.5	20.7	19.0	28.1	24.0
Progression Factor	1.00	1.00	1.00	1.24	0.83	1.03	1.94	0.43	0.04	1.13	1.03	1.44
Incremental Delay, d2	2.4	1.2	1.6	1.3	1.4	0.4	5.2	0.8	0.3	1.3	1.2	1.0
Delay (s)	62.4	46.2	44.6	76.5	39.6	42.1	43.4	11.6	1.2	22.8	30.2	35.4
Level of Service	E	D	D	E	D	D	D	B	A	C	C	D
Approach Delay (s)		48.4			46.1			14.1			30.9	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



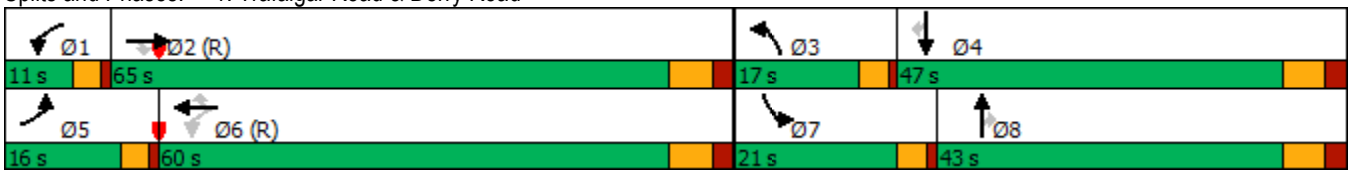
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
Future Volume (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3026	4476	1601	1772	4565	1633	3471	4433	1633	3506	4476	1420
Flt Permitted	0.950			0.178			0.950			0.950		
Satd. Flow (perm)	3026	4476	1601	332	4565	1633	3471	4433	1633	3506	4476	1420
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			232			170			124			124
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	17%	3%	2%	3%	1%	0%	2%	4%	0%	1%	3%	15%
Adj. Flow (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

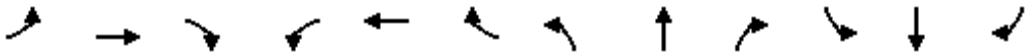
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	16.0	65.0	65.0	11.0	60.0	60.0	17.0	43.0	43.0	21.0	47.0	47.0
Total Split (%)	11.4%	46.4%	46.4%	7.9%	42.9%	42.9%	12.1%	30.7%	30.7%	15.0%	33.6%	33.6%
Maximum Green (s)	12.0	58.1	58.1	7.0	53.1	53.1	13.0	36.2	36.2	17.0	40.2	40.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	12.4	63.2	63.2	66.7	56.6	56.6	13.8	37.8	37.8	17.6	41.5	41.5
Actuated g/C Ratio	0.09	0.45	0.45	0.48	0.40	0.40	0.10	0.27	0.27	0.13	0.30	0.30
v/c Ratio	0.64	0.50	0.27	0.29	0.79	0.31	0.63	0.80	0.10	0.69	0.72	0.23
Control Delay	69.8	35.8	12.1	15.0	33.6	9.2	83.7	41.6	0.9	67.5	47.7	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.8	35.8	12.1	15.0	33.6	9.2	83.7	41.6	0.9	67.5	47.7	6.0
LOS	E	D	B	B	C	A	F	D	A	E	D	A
Approach Delay		36.0			29.6			47.2			48.6	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 40 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 39.5		Intersection LOS: D	
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

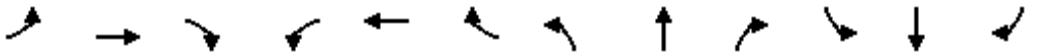
Splits and Phases: 1: Trafalgar Road & Derry Road





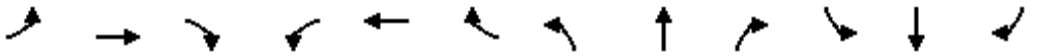
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
v/c Ratio	0.64	0.50	0.27	0.29	0.79	0.31	0.63	0.80	0.10	0.69	0.72	0.23
Control Delay	69.8	35.8	12.1	15.0	33.6	9.2	83.7	41.6	0.9	67.5	47.7	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.8	35.8	12.1	15.0	33.6	9.2	83.7	41.6	0.9	67.5	47.7	6.0
Queue Length 50th (m)	23.8	101.0	10.6	6.5	154.2	16.1	25.5	104.0	0.9	42.0	98.8	0.0
Queue Length 95th (m)	36.2	119.5	32.9	11.8	168.7	31.9	44.0	123.5	1.3	57.6	117.5	12.1
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	280	2019	849	242	1845	761	347	1209	535	450	1349	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.50	0.27	0.29	0.79	0.31	0.62	0.79	0.10	0.68	0.71	0.22

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
Future Volume (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3026	4476	1601	1772	4565	1633	3471	4433	1633	3506	4476	1420
Flt Permitted	0.95	1.00	1.00	0.18	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3026	4476	1601	332	4565	1633	3471	4433	1633	3506	4476	1420
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	171	1015	232	69	1453	237	216	961	52	304	961	115
RTOR Reduction (vph)	0	0	129	0	0	101	0	0	38	0	0	81
Lane Group Flow (vph)	171	1015	103	69	1453	136	216	961	14	304	961	34
Heavy Vehicles (%)	17%	3%	2%	3%	1%	0%	2%	4%	0%	1%	3%	15%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	11.4	60.3	60.3	60.1	54.5	54.5	12.8	35.8	35.8	16.6	39.6	39.6
Effective Green, g (s)	12.4	62.3	62.3	62.1	56.5	56.5	13.8	37.8	37.8	17.6	41.6	41.6
Actuated g/C Ratio	0.09	0.44	0.44	0.44	0.40	0.40	0.10	0.27	0.27	0.13	0.30	0.30
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	268	1991	712	215	1842	659	342	1196	440	440	1330	421
v/s Ratio Prot	c0.06	0.23		0.02	c0.32		0.06	c0.22		c0.09	0.21	
v/s Ratio Perm			0.06	0.13		0.08			0.01			0.02
v/c Ratio	0.64	0.51	0.15	0.32	0.79	0.21	0.63	0.80	0.03	0.69	0.72	0.08
Uniform Delay, d1	61.6	27.9	23.0	23.3	36.5	27.2	60.7	47.6	37.6	58.6	44.0	35.4
Progression Factor	0.96	1.24	3.88	0.72	0.82	0.94	1.25	0.76	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.6	0.9	0.4	1.6	3.2	0.6	4.7	4.1	0.1	5.9	2.4	0.2
Delay (s)	63.7	35.5	89.8	18.5	33.2	26.2	80.3	40.3	37.7	64.5	46.5	35.6
Level of Service	E	D	F	B	C	C	F	D	D	E	D	D
Approach Delay (s)		47.8			31.7			47.2			49.5	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



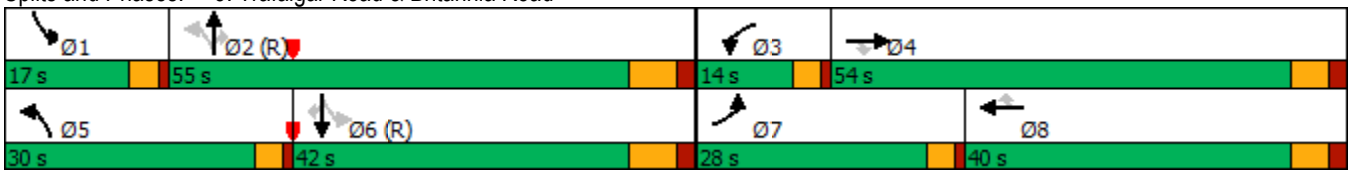
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
Future Volume (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3404	4520	1617	3541	4565	1601	1772	4520	1633	1772	4433	1585
Flt Permitted	0.950			0.950			0.109			0.102		
Satd. Flow (perm)	3404	4520	1617	3541	4565	1601	203	4520	1633	190	4433	1585
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			239			156			156			307
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	2%	1%	0%	1%	2%	3%	2%	0%	3%	4%	3%
Adj. Flow (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
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)		7.4			7.4			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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

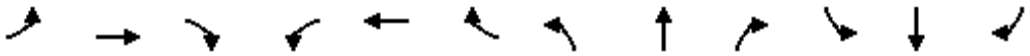
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	28.0	54.0	54.0	14.0	40.0	40.0	30.0	55.0	55.0	17.0	42.0	42.0
Total Split (%)	20.0%	38.6%	38.6%	10.0%	28.6%	28.6%	21.4%	39.3%	39.3%	12.1%	30.0%	30.0%
Maximum Green (s)	24.0	48.0	48.0	10.0	34.0	34.0	26.0	48.0	48.0	13.0	35.0	35.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	22.4	48.9	48.9	10.6	37.1	37.1	70.5	51.9	51.9	56.0	40.4	40.4
Actuated g/C Ratio	0.16	0.35	0.35	0.08	0.26	0.26	0.50	0.37	0.37	0.40	0.29	0.29
v/c Ratio	0.76	0.57	0.33	0.56	0.78	0.26	0.90	0.79	0.30	0.86	0.72	0.45
Control Delay	65.8	38.6	4.9	94.0	35.2	2.1	68.1	25.5	2.2	73.2	48.4	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	38.6	4.9	94.0	35.2	2.1	68.1	25.5	2.2	73.2	48.4	13.0
LOS	E	D	A	F	D	A	E	C	A	E	D	B
Approach Delay		40.7			38.6			30.7			44.2	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 85 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 38.0		Intersection LOS: D	
Intersection Capacity Utilization 84.2%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road

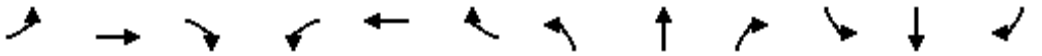




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
v/c Ratio	0.76	0.57	0.33	0.56	0.78	0.26	0.90	0.79	0.30	0.86	0.72	0.45
Control Delay	65.8	38.6	4.9	94.0	35.2	2.1	68.1	25.5	2.2	73.2	48.4	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	38.6	4.9	94.0	35.2	2.1	68.1	25.5	2.2	73.2	48.4	13.0
Queue Length 50th (m)	57.1	83.3	0.0	22.8	111.0	0.7	51.6	142.4	2.2	42.7	82.1	7.9
Queue Length 95th (m)	73.9	99.6	17.3	34.1	125.8	3.1	#121.2	110.0	0.3	#84.1	112.3	39.4
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	607	1614	731	278	1210	539	404	1675	703	234	1277	675
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.56	0.33	0.54	0.78	0.26	0.85	0.79	0.30	0.85	0.72	0.45

Intersection Summary

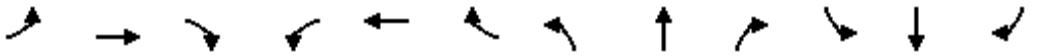
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
Future Volume (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3404	4520	1617	3541	4565	1601	1772	4520	1633	1772	4433	1585
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	3404	4520	1617	3541	4565	1601	203	4520	1633	189	4433	1585
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	416	903	239	151	943	140	345	1324	211	198	916	307
RTOR Reduction (vph)	0	0	156	0	0	103	0	0	98	0	0	218
Lane Group Flow (vph)	416	903	83	151	943	37	345	1324	113	198	916	89
Heavy Vehicles (%)	4%	2%	1%	0%	1%	2%	3%	2%	0%	3%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		6
Actuated Green, G (s)	21.4	46.9	46.9	9.6	35.1	35.1	66.5	49.9	49.9	51.0	38.4	38.4
Effective Green, g (s)	22.4	48.9	48.9	10.6	37.1	37.1	67.5	51.9	51.9	53.0	40.4	40.4
Actuated g/C Ratio	0.16	0.35	0.35	0.08	0.27	0.27	0.48	0.37	0.37	0.38	0.29	0.29
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	544	1578	564	268	1209	424	379	1675	605	225	1279	457
v/s Ratio Prot	c0.12	0.20		0.04	c0.21		c0.16	0.29		0.09	0.21	
v/s Ratio Perm			0.05			0.02	c0.28		0.07	0.25		0.06
v/c Ratio	0.76	0.57	0.15	0.56	0.78	0.09	0.91	0.79	0.19	0.88	0.72	0.19
Uniform Delay, d1	56.3	37.0	31.3	62.5	47.7	38.7	39.6	39.2	29.8	34.9	44.7	37.5
Progression Factor	1.00	1.00	1.00	1.38	0.63	0.24	1.18	0.54	0.12	1.19	0.98	2.53
Incremental Delay, d2	6.3	0.8	0.3	2.5	3.6	0.2	24.7	3.8	0.7	29.1	3.3	0.9
Delay (s)	62.6	37.8	31.5	88.6	33.7	9.5	71.5	25.1	4.2	70.5	47.1	96.0
Level of Service	E	D	C	F	C	A	E	C	A	E	D	F
Approach Delay (s)		43.5			37.7			31.3			60.9	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

2041 Future Background



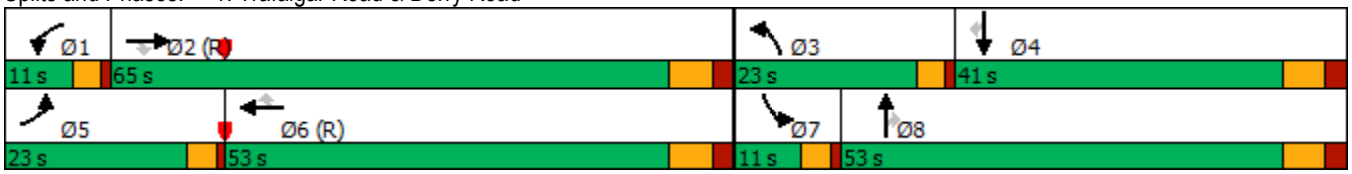
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
Future Volume (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			184			154			124			155
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

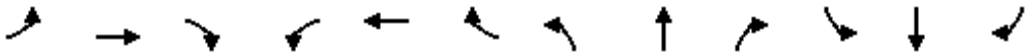
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	23.0	65.0	65.0	11.0	53.0	53.0	23.0	53.0	53.0	11.0	41.0	41.0
Total Split (%)	16.4%	46.4%	46.4%	7.9%	37.9%	37.9%	16.4%	37.9%	37.9%	7.9%	29.3%	29.3%
Maximum Green (s)	19.0	58.1	58.1	7.0	46.1	46.1	19.0	46.2	46.2	7.0	34.2	34.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	19.0	64.5	64.5	8.0	49.1	49.1	19.2	48.2	48.2	8.0	37.0	37.0
Actuated g/C Ratio	0.14	0.46	0.46	0.06	0.35	0.35	0.14	0.34	0.34	0.06	0.26	0.26
v/c Ratio	0.67	0.94	0.26	0.12	0.54	0.49	0.69	0.85	0.03	0.38	0.51	0.04
Control Delay	81.0	31.7	5.0	67.8	42.2	26.3	58.1	49.2	0.1	69.2	45.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	31.7	5.0	67.8	42.2	26.3	58.1	49.2	0.1	69.2	45.7	0.1
LOS	F	C	A	E	D	C	E	D	A	E	D	A
Approach Delay		35.6			38.4			50.4			46.7	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 41.5		Intersection LOS: D	
Intersection Capacity Utilization 91.0%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Trafalgar Road & Derry Road





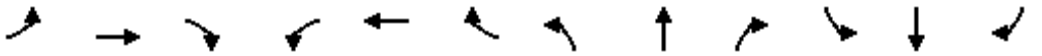
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
v/c Ratio	0.67	0.94	0.26	0.12	0.54	0.49	0.69	0.85	0.03	0.38	0.51	0.04
Control Delay	81.0	31.7	5.0	67.8	42.2	26.3	58.1	49.2	0.1	69.2	45.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	31.7	5.0	67.8	42.2	26.3	58.1	49.2	0.1	69.2	45.7	0.1
Queue Length 50th (m)	43.3	~201.4	4.6	3.6	67.7	31.6	39.5	156.5	0.0	10.6	61.4	0.0
Queue Length 95th (m)	m51.3	#270.7	m13.0	m8.1	80.6	53.0	59.5	176.3	m0.0	19.1	76.2	0.0
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	505	2124	851	202	1616	672	505	1587	643	202	1218	545
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.94	0.26	0.12	0.54	0.49	0.66	0.85	0.03	0.38	0.51	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

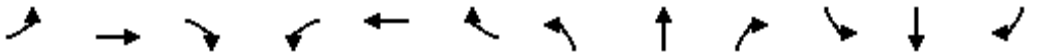
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
Future Volume (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	322	1999	220	25	873	332	335	1343	21	76	618	23
RTOR Reduction (vph)	0	0	101	0	0	100	0	0	14	0	0	17
Lane Group Flow (vph)	322	1999	119	25	873	232	335	1343	7	76	618	6
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	18.0	60.9	60.9	4.2	47.1	47.1	18.2	46.2	46.2	7.0	35.0	35.0
Effective Green, g (s)	19.0	62.9	62.9	5.2	49.1	49.1	19.2	48.2	48.2	8.0	37.0	37.0
Actuated g/C Ratio	0.14	0.45	0.45	0.04	0.35	0.35	0.14	0.34	0.34	0.06	0.26	0.26
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	480	2071	733	131	1617	572	485	1587	562	202	1218	431
v/s Ratio Prot	c0.09	c0.43		0.01	0.19		c0.09	c0.29		0.02	0.13	
v/s Ratio Perm			0.07			0.14			0.00			0.00
v/c Ratio	0.67	0.97	0.16	0.19	0.54	0.41	0.69	0.85	0.01	0.38	0.51	0.01
Uniform Delay, d1	57.5	37.5	22.9	65.4	36.4	34.4	57.6	42.5	30.2	63.6	43.8	38.0
Progression Factor	1.35	0.71	0.87	1.06	1.11	1.27	0.89	1.04	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	7.3	0.2	1.4	1.2	2.0	4.5	4.1	0.0	2.5	0.7	0.0
Delay (s)	79.8	33.8	20.2	70.6	41.7	45.7	55.9	48.1	30.2	66.0	44.5	38.1
Level of Service	E	C	C	E	D	D	E	D	C	E	D	D
Approach Delay (s)		38.5			43.3			49.4			46.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



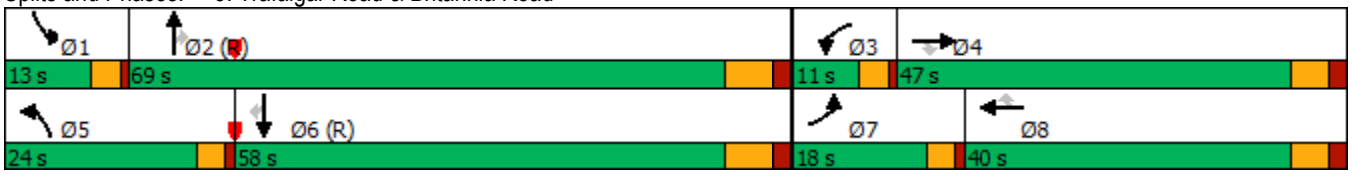
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
Future Volume (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			254			156			126			196
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

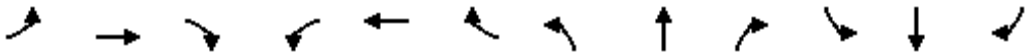
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	18.0	47.0	47.0	11.0	40.0	40.0	24.0	69.0	69.0	13.0	58.0	58.0
Total Split (%)	12.9%	33.6%	33.6%	7.9%	28.6%	28.6%	17.1%	49.3%	49.3%	9.3%	41.4%	41.4%
Maximum Green (s)	14.0	41.0	41.0	7.0	34.0	34.0	20.0	62.0	62.0	9.0	51.0	51.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	14.4	42.2	42.2	8.0	35.8	35.8	20.6	65.0	65.0	9.7	54.1	54.1
Actuated g/C Ratio	0.10	0.30	0.30	0.06	0.26	0.26	0.15	0.46	0.46	0.07	0.39	0.39
v/c Ratio	0.71	0.66	0.75	0.43	0.66	0.38	0.87	0.68	0.19	0.55	0.80	0.72
Control Delay	72.0	45.2	28.7	51.9	49.6	15.7	82.6	23.2	4.1	71.8	42.6	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.0	45.2	28.7	51.9	49.6	15.7	82.6	23.2	4.1	71.8	42.6	29.2
LOS	E	D	C	D	D	B	F	C	A	E	D	C
Approach Delay		44.4			43.4			34.8			41.0	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 90 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 40.4		Intersection LOS: D	
Intersection Capacity Utilization 78.2%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road

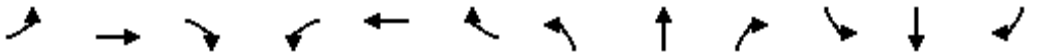




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
v/c Ratio	0.71	0.66	0.75	0.43	0.66	0.38	0.87	0.68	0.19	0.55	0.80	0.72
Control Delay	72.0	45.2	28.7	51.9	49.6	15.7	82.6	23.2	4.1	71.8	42.6	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.0	45.2	28.7	51.9	49.6	15.7	82.6	23.2	4.1	71.8	42.6	29.2
Queue Length 50th (m)	36.1	91.8	63.9	12.5	82.4	21.9	67.1	89.8	2.0	18.9	147.1	84.9
Queue Length 95th (m)	50.9	109.4	107.9	m17.1	100.0	42.5	#90.7	102.7	8.6	29.9	169.4	130.0
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	379	1416	677	202	1186	535	531	2141	825	252	1782	751
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.65	0.74	0.43	0.66	0.38	0.85	0.68	0.19	0.54	0.80	0.72

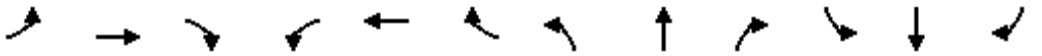
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
Future Volume (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	259	919	501	86	784	204	452	1452	158	135	1427	542
RTOR Reduction (vph)	0	0	177	0	0	116	0	0	67	0	0	120
Lane Group Flow (vph)	259	919	324	86	784	88	452	1452	91	135	1427	422
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	13.4	40.2	40.2	7.0	33.8	33.8	19.6	63.1	63.1	8.7	52.2	52.2
Effective Green, g (s)	14.4	42.2	42.2	8.0	35.8	35.8	20.6	65.1	65.1	9.7	54.2	54.2
Actuated g/C Ratio	0.10	0.30	0.30	0.06	0.26	0.26	0.15	0.46	0.46	0.07	0.39	0.39
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	364	1389	492	202	1179	417	521	2144	759	245	1785	632
v/s Ratio Prot	c0.07	c0.20		0.02	0.17		c0.13	0.31		0.04	c0.31	
v/s Ratio Perm			0.20			0.05			0.06			0.26
v/c Ratio	0.71	0.66	0.66	0.43	0.66	0.21	0.87	0.68	0.12	0.55	0.80	0.67
Uniform Delay, d1	60.8	42.7	42.6	63.8	46.7	41.0	58.4	29.2	21.2	63.0	38.1	35.5
Progression Factor	1.00	1.00	1.00	0.71	1.00	1.18	1.13	0.72	0.62	1.00	1.00	1.00
Incremental Delay, d2	6.4	1.6	4.2	1.4	1.8	0.5	13.6	1.7	0.3	2.7	3.9	5.5
Delay (s)	67.2	44.3	46.8	46.9	48.4	49.0	79.8	22.8	13.4	65.7	41.9	41.0
Level of Service	E	D	D	D	D	D	E	C	B	E	D	D
Approach Delay (s)		48.6			48.4			34.6			43.2	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	42.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



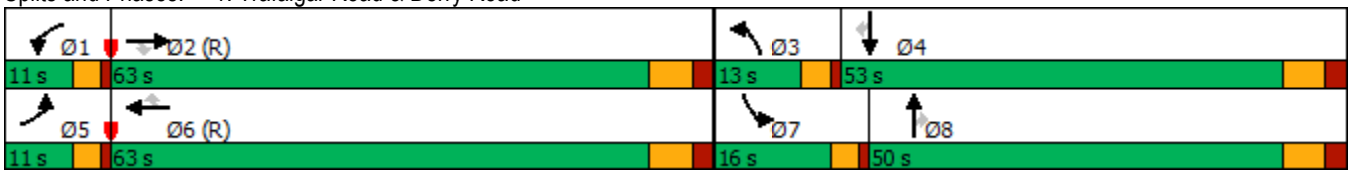
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
Future Volume (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			226			110			93			93
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

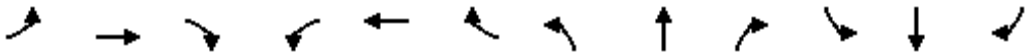
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	11.0	63.0	63.0	11.0	63.0	63.0	13.0	50.0	50.0	16.0	53.0	53.0
Total Split (%)	7.9%	45.0%	45.0%	7.9%	45.0%	45.0%	9.3%	35.7%	35.7%	11.4%	37.9%	37.9%
Maximum Green (s)	7.0	56.1	56.1	7.0	56.1	56.1	9.0	43.2	43.2	12.0	46.2	46.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	8.0	60.3	60.3	8.0	58.1	58.1	10.0	45.2	45.2	13.0	48.2	48.2
Actuated g/C Ratio	0.06	0.43	0.43	0.06	0.42	0.42	0.07	0.32	0.32	0.09	0.34	0.34
v/c Ratio	0.50	0.65	0.43	0.18	0.91	0.24	0.92	0.68	0.03	0.73	0.88	0.08
Control Delay	91.7	19.9	4.1	61.9	57.5	24.0	97.8	62.7	1.2	75.2	50.8	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.7	19.9	4.1	61.9	57.5	24.0	97.8	62.7	1.2	75.2	50.8	0.7
LOS	F	B	A	E	E	C	F	E	A	E	D	A
Approach Delay		20.9			54.5			68.4			52.7	
Approach LOS		C			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 47.9		Intersection LOS: D	
Intersection Capacity Utilization 87.8%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Trafalgar Road & Derry Road

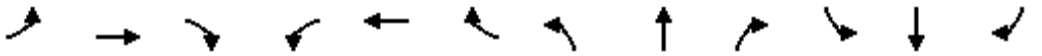




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
v/c Ratio	0.50	0.65	0.43	0.18	0.91	0.24	0.92	0.68	0.03	0.73	0.88	0.08
Control Delay	91.7	19.9	4.1	61.9	57.5	24.0	97.8	62.7	1.2	75.2	50.8	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.7	19.9	4.1	61.9	57.5	24.0	97.8	62.7	1.2	75.2	50.8	0.7
Queue Length 50th (m)	15.4	48.1	7.2	5.3	169.5	19.5	33.8	122.4	0.0	33.6	151.3	0.0
Queue Length 95th (m)	m22.0	62.8	17.0	m9.0	189.7	37.5	#58.9	138.3	1.5	#48.1	174.1	1.3
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	202	1985	831	202	1913	742	252	1488	590	328	1587	623
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.65	0.43	0.18	0.91	0.24	0.92	0.68	0.03	0.73	0.88	0.08

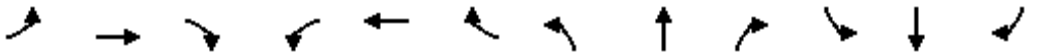
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
Future Volume (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	102	1285	357	36	1738	177	233	1011	16	238	1397	51
RTOR Reduction (vph)	0	0	130	0	0	64	0	0	11	0	0	33
Lane Group Flow (vph)	102	1285	227	36	1738	113	233	1011	5	238	1397	18
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	7.0	57.5	57.5	5.6	56.1	56.1	9.0	43.2	43.2	12.0	46.2	46.2
Effective Green, g (s)	8.0	59.5	59.5	6.6	58.1	58.1	10.0	45.2	45.2	13.0	48.2	48.2
Actuated g/C Ratio	0.06	0.42	0.42	0.05	0.42	0.42	0.07	0.32	0.32	0.09	0.34	0.34
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	202	1959	694	166	1913	677	252	1488	527	328	1587	562
v/s Ratio Prot	c0.03	0.28		0.01	c0.38		c0.07	0.22		0.07	c0.30	
v/s Ratio Perm			0.14			0.07			0.00			0.01
v/c Ratio	0.50	0.66	0.33	0.22	0.91	0.17	0.92	0.68	0.01	0.73	0.88	0.03
Uniform Delay, d1	64.1	32.1	26.9	64.2	38.5	25.7	64.6	41.1	32.2	61.8	43.2	30.4
Progression Factor	1.32	0.58	0.29	0.95	1.32	2.26	0.91	1.46	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	1.3	0.9	1.2	6.8	0.4	36.8	1.6	0.0	9.4	6.5	0.0
Delay (s)	87.8	19.9	8.8	62.5	57.3	58.5	95.8	61.4	32.2	71.2	49.7	30.5
Level of Service	F	B	A	E	E	E	F	E	C	E	D	C
Approach Delay (s)		21.6			57.5			67.4			52.2	
Approach LOS		C			E			E			D	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



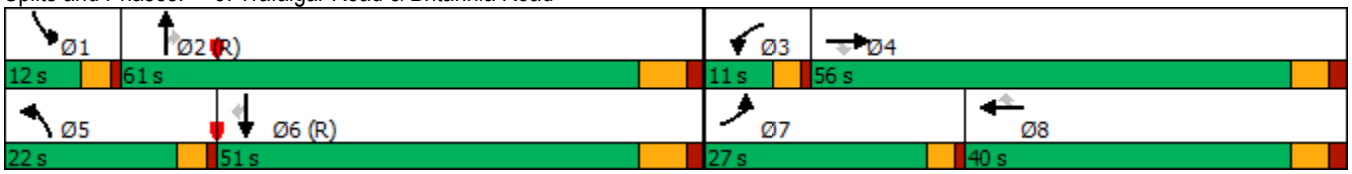
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
Future Volume (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242			156			138			312
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
Shared Lane Traffic (%)												
Lane Group Flow (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

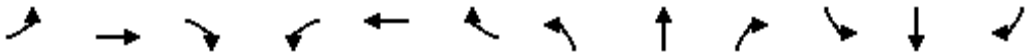
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	27.0	56.0	56.0	11.0	40.0	40.0	22.0	61.0	61.0	12.0	51.0	51.0
Total Split (%)	19.3%	40.0%	40.0%	7.9%	28.6%	28.6%	15.7%	43.6%	43.6%	8.6%	36.4%	36.4%
Maximum Green (s)	23.0	50.0	50.0	7.0	34.0	34.0	18.0	54.0	54.0	8.0	44.0	44.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	24.0	52.0	52.0	8.0	36.0	36.0	19.0	56.0	56.0	9.0	46.0	46.0
Actuated g/C Ratio	0.17	0.37	0.37	0.06	0.26	0.26	0.14	0.40	0.40	0.06	0.33	0.33
v/c Ratio	0.95	0.67	0.79	0.63	0.93	0.26	1.14	0.88	0.29	0.92	1.01	0.54
Control Delay	82.5	39.1	31.5	95.7	51.1	5.2	144.9	28.9	5.6	111.3	73.1	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.5	39.1	31.5	95.7	51.1	5.2	144.9	28.9	5.6	111.3	73.1	17.3
LOS	F	D	C	F	D	A	F	C	A	F	E	B
Approach Delay		47.9			50.7			53.4			66.3	
Approach LOS		D			D			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 90 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 135			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 54.7		Intersection LOS: D	
Intersection Capacity Utilization 96.8%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road



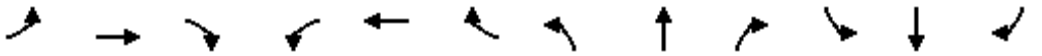


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
v/c Ratio	0.95	0.67	0.79	0.63	0.93	0.26	1.14	0.88	0.29	0.92	1.01	0.54
Control Delay	82.5	39.1	31.5	95.7	51.1	5.2	144.9	28.9	5.6	111.3	73.1	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.5	39.1	31.5	95.7	51.1	5.2	144.9	28.9	5.6	111.3	73.1	17.3
Queue Length 50th (m)	82.0	109.2	93.0	15.4	127.1	15.0	~90.2	124.5	0.5	28.9	~168.5	17.6
Queue Length 95th (m)	#116.4	127.8	144.5	30.2	#156.8	9.7	#125.0	172.7	12.9	#54.3	#221.7	58.5
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	607	1712	758	202	1185	535	480	1844	736	227	1515	746
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.67	0.79	0.63	0.93	0.26	1.14	0.88	0.29	0.92	1.01	0.54

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

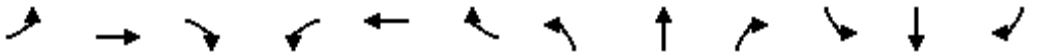


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
Future Volume (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	574	1140	600	127	1101	137	545	1621	213	208	1524	400
RTOR Reduction (vph)	0	0	152	0	0	102	0	0	83	0	0	209
Lane Group Flow (vph)	574	1140	448	127	1101	35	545	1621	130	208	1524	191
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	23.0	50.0	50.0	7.0	34.0	34.0	18.0	54.0	54.0	8.0	44.0	44.0
Effective Green, g (s)	24.0	52.0	52.0	8.0	36.0	36.0	19.0	56.0	56.0	9.0	46.0	46.0
Actuated g/C Ratio	0.17	0.37	0.37	0.06	0.26	0.26	0.14	0.40	0.40	0.06	0.33	0.33
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	607	1712	606	202	1185	419	480	1844	653	227	1515	536
v/s Ratio Prot	c0.16	0.25		0.04	c0.24		c0.15	0.35		0.06	c0.33	
v/s Ratio Perm			0.27			0.02			0.08			0.12
v/c Ratio	0.95	0.67	0.74	0.63	0.93	0.08	1.14	0.88	0.20	0.92	1.01	0.36
Uniform Delay, d1	57.4	36.7	38.1	64.5	50.8	39.5	60.5	38.9	27.4	65.1	47.0	35.7
Progression Factor	1.00	1.00	1.00	1.28	0.75	1.03	1.22	0.59	0.46	1.17	1.09	1.73
Incremental Delay, d2	23.7	1.3	5.7	5.3	11.8	0.2	81.8	5.7	0.6	33.0	22.5	1.5
Delay (s)	81.0	38.1	43.8	88.1	49.9	40.9	155.9	28.6	13.3	109.3	73.9	63.3
Level of Service	F	D	D	F	D	D	F	C	B	F	E	E
Approach Delay (s)		50.2			52.6			56.4			75.3	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	58.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Appendix J
Future Total SYNCHRO Capacity and Queuing Analysis Reports

2031 Future Total



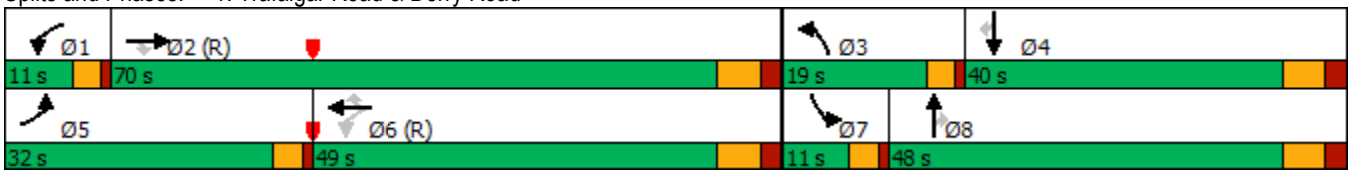
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
Future Volume (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3437	4520	1570	1825	4433	1633	3309	4230	1633	3541	4080	944
Flt Permitted	0.950			0.087			0.950			0.950		
Satd. Flow (perm)	3437	4520	1570	167	4433	1633	3309	4230	1633	3541	4080	944
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			223			154			124			155
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	4%	0%	4%	0%	7%	9%	0%	0%	13%	73%
Adj. Flow (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

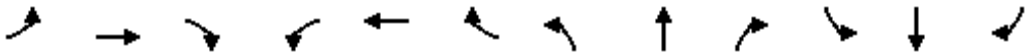
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	32.0	70.0	70.0	11.0	49.0	49.0	19.0	48.0	48.0	11.0	40.0	40.0
Total Split (%)	22.9%	50.0%	50.0%	7.9%	35.0%	35.0%	13.6%	34.3%	34.3%	7.9%	28.6%	28.6%
Maximum Green (s)	28.0	63.1	63.1	7.0	42.1	42.1	15.0	41.2	41.2	7.0	33.2	33.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	26.2	67.6	67.6	57.3	47.2	47.2	15.6	42.9	42.9	8.0	35.3	35.3
Actuated g/C Ratio	0.19	0.48	0.48	0.41	0.34	0.34	0.11	0.31	0.31	0.06	0.25	0.25
v/c Ratio	0.80	0.77	0.26	0.39	0.51	0.67	0.66	0.82	0.13	0.56	0.54	0.13
Control Delay	69.7	32.9	6.9	28.6	37.8	30.2	89.8	54.2	12.8	75.6	47.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	32.9	6.9	28.6	37.8	30.2	89.8	54.2	12.8	75.6	47.6	0.8
LOS	E	C	A	C	D	C	F	D	B	E	D	A
Approach Delay		38.3			34.7			58.1			49.0	
Approach LOS		D			C			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 43.6		Intersection LOS: D	
Intersection Capacity Utilization 79.6%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Trafalgar Road & Derry Road

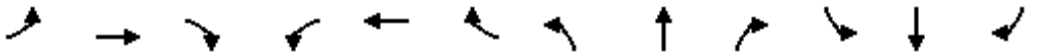




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
v/c Ratio	0.80	0.77	0.26	0.39	0.51	0.67	0.66	0.82	0.13	0.56	0.54	0.13
Control Delay	69.7	32.9	6.9	28.6	37.8	30.2	89.8	54.2	12.8	75.6	47.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	32.9	6.9	28.6	37.8	30.2	89.8	54.2	12.8	75.6	47.6	0.8
Queue Length 50th (m)	78.2	112.2	1.1	8.1	77.0	51.3	36.9	78.5	3.8	16.1	55.4	0.0
Queue Length 95th (m)	96.3	148.3	m24.8	16.8	85.3	55.3	50.9	118.9	17.1	26.4	70.0	0.0
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	711	2182	873	165	1495	652	378	1305	589	202	1027	353
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.77	0.26	0.39	0.51	0.67	0.64	0.82	0.13	0.56	0.54	0.13

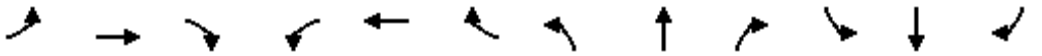
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
Future Volume (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3437	4520	1570	1825	4433	1633	3309	4230	1633	3541	4080	944
Flt Permitted	0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3437	4520	1570	166	4433	1633	3309	4230	1633	3541	4080	944
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	514	1683	223	65	761	434	243	1069	78	114	552	47
RTOR Reduction (vph)	0	0	117	0	0	102	0	0	54	0	0	35
Lane Group Flow (vph)	514	1683	106	65	761	332	243	1069	24	114	552	12
Heavy Vehicles (%)	3%	2%	4%	0%	4%	0%	7%	9%	0%	0%	13%	73%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	25.2	64.8	64.8	50.8	45.2	45.2	14.6	40.9	40.9	7.0	33.3	33.3
Effective Green, g (s)	26.2	66.8	66.8	52.8	47.2	47.2	15.6	42.9	42.9	8.0	35.3	35.3
Actuated g/C Ratio	0.19	0.48	0.48	0.38	0.34	0.34	0.11	0.31	0.31	0.06	0.25	0.25
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	643	2156	749	140	1494	550	368	1296	500	202	1028	238
v/s Ratio Prot	c0.15	c0.37		0.02	0.17		c0.07	c0.25		0.03	0.14	
v/s Ratio Perm			0.07	0.15		0.20			0.01			0.01
v/c Ratio	0.80	0.78	0.14	0.46	0.51	0.60	0.66	0.82	0.05	0.56	0.54	0.05
Uniform Delay, d1	54.4	30.5	20.5	30.4	37.1	38.6	59.7	45.1	34.2	64.3	45.3	39.6
Progression Factor	1.16	1.01	2.45	1.12	0.97	0.97	1.37	1.08	13.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	1.9	0.3	4.8	1.2	4.7	5.0	4.3	0.1	5.8	1.0	0.2
Delay (s)	67.7	32.7	50.6	39.0	37.0	42.0	86.9	52.9	444.5	70.1	46.3	39.8
Level of Service	E	C	D	D	D	D	F	D	F	E	D	D
Approach Delay (s)		41.8			38.9			80.8			49.7	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM 2000 Control Delay	51.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



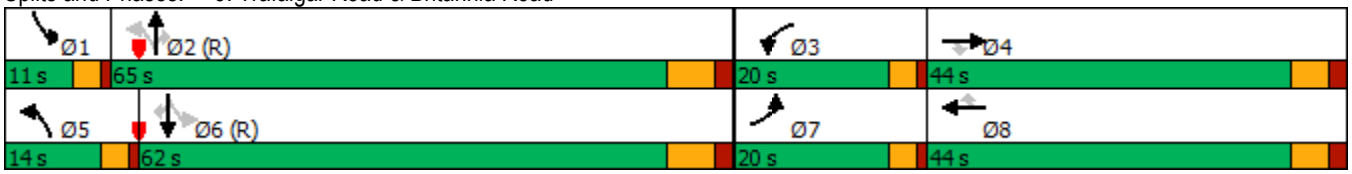
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
Future Volume (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3309	4520	1601	3541	4391	1633	1772	4350	1633	1789	4350	1633
Flt Permitted	0.950			0.950			0.106			0.175		
Satd. Flow (perm)	3309	4520	1601	3541	4391	1633	198	4350	1633	330	4350	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			146			147			169			336
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	2%	2%	0%	5%	0%	3%	6%	0%	2%	6%	0%
Adj. Flow (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
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)		7.4			7.4			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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

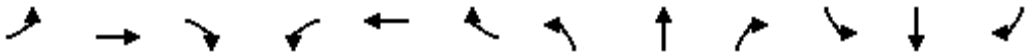
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	14.0	65.0	65.0	11.0	62.0	62.0
Total Split (%)	14.3%	31.4%	31.4%	14.3%	31.4%	31.4%	10.0%	46.4%	46.4%	7.9%	44.3%	44.3%
Maximum Green (s)	16.0	38.0	38.0	16.0	38.0	38.0	10.0	58.0	58.0	7.0	55.0	55.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	15.4	37.8	37.8	13.2	35.5	35.5	78.2	65.0	65.0	73.9	62.8	62.8
Actuated g/C Ratio	0.11	0.27	0.27	0.09	0.25	0.25	0.56	0.46	0.46	0.53	0.45	0.45
v/c Ratio	0.65	0.58	0.56	0.52	0.63	0.37	0.67	0.50	0.20	0.48	0.62	0.59
Control Delay	68.4	46.1	25.6	79.6	40.9	12.9	52.0	12.5	0.7	29.2	38.0	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.4	46.1	25.6	79.6	40.9	12.9	52.0	12.5	0.7	29.2	38.0	20.9
LOS	E	D	C	E	D	B	D	B	A	C	D	C
Approach Delay		45.4			42.1			15.7			32.5	
Approach LOS		D			D			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 50 (36%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 33.2		Intersection LOS: C	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road

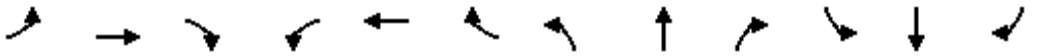




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
v/c Ratio	0.65	0.58	0.56	0.52	0.63	0.37	0.67	0.50	0.20	0.48	0.62	0.59
Control Delay	68.4	46.1	25.6	79.6	40.9	12.9	52.0	12.5	0.7	29.2	38.0	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.4	46.1	25.6	79.6	40.9	12.9	52.0	12.5	0.7	29.2	38.0	20.9
Queue Length 50th (m)	32.6	70.5	35.9	25.2	65.9	4.5	18.9	80.8	0.2	15.5	112.0	57.9
Queue Length 95th (m)	46.5	85.0	64.7	m35.7	78.0	m21.8	#51.3	39.0	0.5	39.2	161.3	137.9
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	401	1308	567	429	1254	571	241	2018	848	269	1952	918
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.55	0.53	0.40	0.56	0.34	0.66	0.50	0.20	0.48	0.62	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
Future Volume (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3309	4520	1601	3541	4391	1633	1772	4350	1633	1789	4350	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)	3309	4520	1601	3541	4391	1633	198	4350	1633	329	4350	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	237	713	301	173	699	193	159	1011	169	130	1210	539
RTOR Reduction (vph)	0	0	107	0	0	110	0	0	91	0	0	186
Lane Group Flow (vph)	237	713	194	173	699	83	159	1011	78	130	1210	353
Heavy Vehicles (%)	7%	2%	2%	0%	5%	0%	3%	6%	0%	2%	6%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		6
Actuated Green, G (s)	14.4	35.8	35.8	12.2	33.6	33.6	73.2	62.9	62.9	68.8	60.7	60.7
Effective Green, g (s)	15.4	37.8	37.8	13.2	35.6	35.6	75.2	64.9	64.9	70.8	62.7	62.7
Actuated g/C Ratio	0.11	0.27	0.27	0.09	0.25	0.25	0.54	0.46	0.46	0.51	0.45	0.45
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	363	1220	432	333	1116	415	233	2016	757	261	1948	731
v/s Ratio Prot	c0.07	0.16		0.05	c0.16		c0.05	0.23		0.03	0.28	
v/s Ratio Perm			0.12			0.05	c0.31		0.05	0.22		0.22
v/c Ratio	0.65	0.58	0.45	0.52	0.63	0.20	0.68	0.50	0.10	0.50	0.62	0.48
Uniform Delay, d1	59.7	44.3	42.5	60.4	46.3	41.0	21.4	26.2	21.2	19.7	29.6	27.2
Progression Factor	1.00	1.00	1.00	1.24	0.83	0.99	2.13	0.43	0.05	1.45	1.19	1.66
Incremental Delay, d2	4.2	1.1	1.6	1.3	1.5	0.5	7.9	0.9	0.3	1.4	1.4	2.2
Delay (s)	63.9	45.4	44.0	75.9	40.1	41.2	53.5	12.1	1.2	30.0	36.6	47.3
Level of Service	E	D	D	E	D	D	D	B	A	C	D	D
Approach Delay (s)		48.6			46.1			15.6			39.2	
Approach LOS		D			D			B			D	

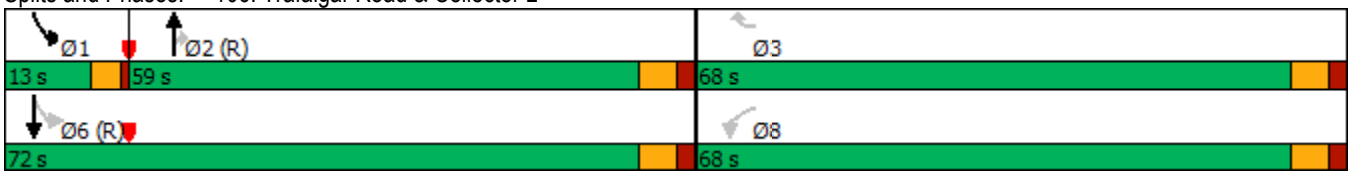
Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

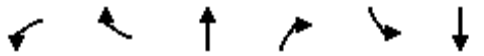
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	395	166	1462	176	78	1019
Future Volume (vph)	395	166	1462	176	78	1019
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0	0.0		100.0	100.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	20.0				50.0	
Lane Util. Factor	1.00	1.00	*0.80	1.00	1.00	*0.80
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1789	1601	4520	1601	1789	4520
Flt Permitted	0.950				0.087	
Satd. Flow (perm)	1789	1601	4520	1601	164	4520
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		163		169		
Link Speed (k/h)	48		60			60
Link Distance (m)	184.6		368.2			594.7
Travel Time (s)	13.8		22.1			35.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	395	166	1462	176	78	1019
Shared Lane Traffic (%)						
Lane Group Flow (vph)	395	166	1462	176	78	1019
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	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
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	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
Detector 1 Queue (s)	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
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	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	3		2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	3	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	5.0	20.0	20.0	7.0	20.0
Minimum Split (s)	40.0	11.0	26.0	26.0	13.0	26.0
Total Split (s)	68.0	68.0	59.0	59.0	13.0	72.0
Total Split (%)	48.6%	48.6%	42.1%	42.1%	9.3%	51.4%
Maximum Green (s)	62.0	62.0	53.0	53.0	9.0	66.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	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	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0		7.0	7.0		7.0
Flash Dont Walk (s)	27.0		9.0	9.0		9.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	37.7	37.7	78.1	78.1	92.3	90.3
Actuated g/C Ratio	0.27	0.27	0.56	0.56	0.66	0.64
v/c Ratio	0.82	0.30	0.58	0.18	0.38	0.35
Control Delay	61.5	6.4	23.7	7.4	18.3	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	6.4	23.7	7.4	18.3	3.9
LOS	E	A	C	A	B	A
Approach Delay	45.2		22.0			4.9
Approach LOS	D		C			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 20.2		Intersection LOS: C	
Intersection Capacity Utilization 69.3%		ICU Level of Service C	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 106: Trafalgar Road & Collector L





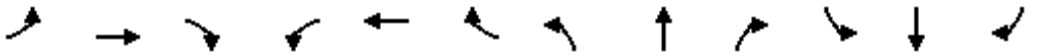
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	395	166	1462	176	78	1019
v/c Ratio	0.82	0.30	0.58	0.18	0.38	0.35
Control Delay	61.5	6.4	23.7	7.4	18.3	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	6.4	23.7	7.4	18.3	3.9
Queue Length 50th (m)	102.9	0.6	90.1	2.5	3.2	10.3
Queue Length 95th (m)	127.3	15.8	171.1	23.1	15.8	36.4
Internal Link Dist (m)	160.6		344.2			570.7
Turn Bay Length (m)	110.0			100.0	100.0	
Base Capacity (vph)	792	799	2520	967	216	2914
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.21	0.58	0.18	0.36	0.35

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	395	166	1462	176	78	1019
Future Volume (vph)	395	166	1462	176	78	1019
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	4.0	6.0
Lane Util. Factor	1.00	1.00	*0.80	1.00	1.00	*0.80
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1789	1601	4520	1601	1789	4520
Flt Permitted	0.95	1.00	1.00	1.00	0.09	1.00
Satd. Flow (perm)	1789	1601	4520	1601	164	4520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	395	166	1462	176	78	1019
RTOR Reduction (vph)	0	119	0	75	0	0
Lane Group Flow (vph)	395	47	1462	101	78	1019
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	3		2	6	
Actuated Green, G (s)	37.7	37.7	78.1	78.1	90.3	90.3
Effective Green, g (s)	37.7	37.7	78.1	78.1	90.3	90.3
Actuated g/C Ratio	0.27	0.27	0.56	0.56	0.64	0.64
Clearance Time (s)	6.0	6.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	481	431	2521	893	200	2915
v/s Ratio Prot			c0.32		0.02	c0.23
v/s Ratio Perm	c0.22	0.03		0.06	0.23	
v/c Ratio	0.82	0.11	0.58	0.11	0.39	0.35
Uniform Delay, d1	48.0	38.5	20.2	14.6	13.7	11.4
Progression Factor	1.00	1.00	1.05	2.20	1.28	0.29
Incremental Delay, d2	10.8	0.1	0.9	0.2	1.2	0.3
Delay (s)	58.8	38.6	22.0	32.4	18.8	3.6
Level of Service	E	D	C	C	B	A
Approach Delay (s)	52.8		23.1			4.7
Approach LOS	D		C			A

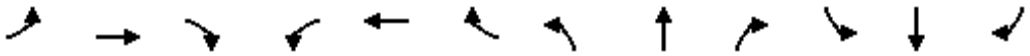
Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	177	23	42	252	71	90	51	60	133	103	218
Future Volume (vph)	77	177	23	42	252	71	90	51	60	133	103	218
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	10.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.967			0.960			0.935	
Flt Protected	0.950			0.950				0.978			0.986	
Satd. Flow (prot)	1789	1851	0	1789	1821	0	0	1768	0	0	1736	0
Flt Permitted	0.950			0.950				0.978			0.986	
Satd. Flow (perm)	1789	1851	0	1789	1821	0	0	1768	0	0	1736	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		184.6			422.4			376.5			596.3	
Travel Time (s)		13.8			31.7			28.2			44.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	77	177	23	42	252	71	90	51	60	133	103	218
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	200	0	42	323	0	0	201	0	0	454	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			0.0			0.0	
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
Sign Control		Stop			Stop			Stop			Stop	

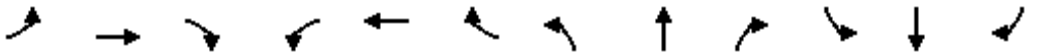
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	77	177	23	42	252	71	90	51	60	133	103	218
Future Volume (vph)	77	177	23	42	252	71	90	51	60	133	103	218
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	77	177	23	42	252	71	90	51	60	133	103	218

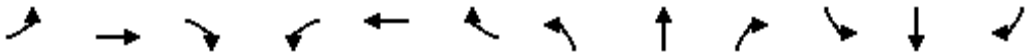
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	77	200	42	323	201	454
Volume Left (vph)	77	0	42	0	90	133
Volume Right (vph)	0	23	0	71	60	218
Hadj (s)	0.53	-0.05	0.53	-0.12	-0.06	-0.20
Departure Headway (s)	8.2	7.6	8.0	7.3	7.2	6.3
Degree Utilization, x	0.18	0.42	0.09	0.65	0.40	0.80
Capacity (veh/h)	397	424	422	464	442	454
Control Delay (s)	11.7	14.8	10.6	21.8	14.8	30.0
Approach Delay (s)	14.0		20.5		14.8	30.0
Approach LOS	B		C		B	D

Intersection Summary				
Delay	21.5			
Level of Service	C			
Intersection Capacity Utilization	61.4%	ICU Level of Service		B
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	226	45	26	242	59	31	87	39	51	74	75
Future Volume (vph)	150	226	45	26	242	59	31	87	39	51	74	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.971			0.954			0.924	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1836	0	1789	1829	0	1789	1797	0	1789	1740	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1789	1836	0	1789	1829	0	1789	1797	0	1789	1740	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		422.4			514.0			400.7			591.4	
Travel Time (s)		31.7			38.6			30.1			44.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	226	45	26	242	59	31	87	39	51	74	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	271	0	26	301	0	31	126	0	51	149	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
Sign Control		Free			Free			Stop			Stop	

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	226	45	26	242	59	31	87	39	51	74	75
Future Volume (Veh/h)	150	226	45	26	242	59	31	87	39	51	74	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	150	226	45	26	242	59	31	87	39	51	74	75
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	301			271			954	902	248	932	894	272
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	301			271			954	902	248	932	894	272
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			98			79	64	95	66	69	90
cM capacity (veh/h)	1260			1292			148	240	790	152	242	767

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	150	271	26	301	31	126	51	149
Volume Left	150	0	26	0	31	0	51	0
Volume Right	0	45	0	59	0	39	0	75
cSH	1260	1700	1292	1700	148	306	152	369
Volume to Capacity	0.12	0.16	0.02	0.18	0.21	0.41	0.34	0.40
Queue Length 95th (m)	3.1	0.0	0.5	0.0	5.8	14.7	10.4	14.4
Control Delay (s)	8.2	0.0	7.8	0.0	35.7	24.8	40.2	21.2
Lane LOS	A		A		E	C	E	C
Approach Delay (s)	2.9		0.6		27.0		26.0	
Approach LOS					D		D	

Intersection Summary				
Average Delay	9.8			
Intersection Capacity Utilization	49.8%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	93	1643	23	11	1043
Future Volume (vph)	47	93	1643	23	11	1043
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0	0.0		50.0	50.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1789	1601	5132	0	1789	5142
Flt Permitted	0.950				0.128	
Satd. Flow (perm)	1789	1601	5132	0	241	5142
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		15	2			
Link Speed (k/h)	48		60			60
Link Distance (m)	189.3		594.7			275.8
Travel Time (s)	14.2		35.7			16.5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	93	1643	23	11	1043
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	93	1666	0	11	1043
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	3		2			6
Permitted Phases		3			6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3	3	2		6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	20.0		20.0	20.0
Minimum Split (s)	40.0	40.0	26.0		26.0	26.0
Total Split (s)	61.0	61.0	79.0		79.0	79.0
Total Split (%)	43.6%	43.6%	56.4%		56.4%	56.4%
Maximum Green (s)	55.0	55.0	73.0		73.0	73.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	27.0	27.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	13.0	13.0	115.0		115.0	115.0
Actuated g/C Ratio	0.09	0.09	0.82		0.82	0.82
v/c Ratio	0.28	0.57	0.40		0.06	0.25
Control Delay	62.4	64.4	5.6		3.4	3.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	62.4	64.4	5.6		3.4	3.0
LOS	E	E	A		A	A
Approach Delay	63.7		5.6			3.0
Approach LOS	E		A			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 108 (77%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 50.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 422: Trafalgar Road & Street H

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	47	93	1666	11	1043
v/c Ratio	0.28	0.57	0.40	0.06	0.25
Control Delay	62.4	64.4	5.6	3.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	64.4	5.6	3.4	3.0
Queue Length 50th (m)	12.4	21.1	7.9	0.4	15.8
Queue Length 95th (m)	24.3	38.1	124.2	m1.4	19.6
Internal Link Dist (m)	165.3		570.7		251.8
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	702	638	4216	198	4224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.15	0.40	0.06	0.25

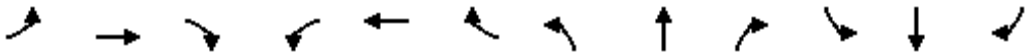
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	93	1643	23	11	1043
Future Volume (vph)	47	93	1643	23	11	1043
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1789	1601	5131		1789	5142
Flt Permitted	0.95	1.00	1.00		0.13	1.00
Satd. Flow (perm)	1789	1601	5131		241	5142
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	93	1643	23	11	1043
RTOR Reduction (vph)	0	14	0	0	0	0
Lane Group Flow (vph)	47	79	1666	0	11	1043
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	3		2			6
Permitted Phases		3			6	
Actuated Green, G (s)	13.0	13.0	115.0		115.0	115.0
Effective Green, g (s)	13.0	13.0	115.0		115.0	115.0
Actuated g/C Ratio	0.09	0.09	0.82		0.82	0.82
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	166	148	4214		197	4223
v/s Ratio Prot	0.03		c0.32			0.20
v/s Ratio Perm		c0.05			0.05	
v/c Ratio	0.28	0.54	0.40		0.06	0.25
Uniform Delay, d1	59.2	60.6	3.3		2.3	2.8
Progression Factor	1.00	1.00	1.53		0.91	0.96
Incremental Delay, d2	0.9	3.7	0.2		0.5	0.1
Delay (s)	60.1	64.3	5.3		2.7	2.8
Level of Service	E	E	A		A	A
Approach Delay (s)	62.9		5.3			2.8
Approach LOS	E		A			A

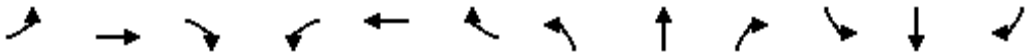
Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	0	122	69	0	5	39	40	20	4	37	22
Future Volume (vph)	33	0	122	69	0	5	39	40	20	4	37	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.894			0.991			0.973			0.953	
Flt Protected		0.989			0.955			0.981			0.997	
Satd. Flow (prot)	0	1665	0	0	1782	0	0	1798	0	0	1790	0
Flt Permitted		0.989			0.955			0.981			0.997	
Satd. Flow (perm)	0	1665	0	0	1782	0	0	1798	0	0	1790	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		189.3			385.1			596.3			279.2	
Travel Time (s)		14.2			28.9			44.7			20.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	33	0	122	69	0	5	39	40	20	4	37	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	155	0	0	74	0	0	99	0	0	63	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
Sign Control		Stop			Stop			Stop			Stop	

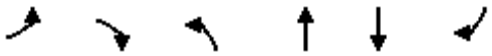
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	33	0	122	69	0	5	39	40	20	4	37	22
Future Volume (vph)	33	0	122	69	0	5	39	40	20	4	37	22
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	33	0	122	69	0	5	39	40	20	4	37	22

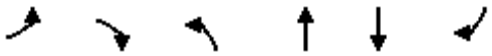
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	155	74	99	63
Volume Left (vph)	33	69	39	4
Volume Right (vph)	122	5	20	22
Hadj (s)	-0.40	0.18	-0.01	-0.16
Departure Headway (s)	4.0	4.6	4.5	4.4
Degree Utilization, x	0.17	0.09	0.12	0.08
Capacity (veh/h)	868	737	760	769
Control Delay (s)	7.8	8.1	8.1	7.7
Approach Delay (s)	7.8	8.1	8.1	7.7
Approach LOS	A	A	A	A

Intersection Summary				
Delay		7.9		
Level of Service		A		
Intersection Capacity Utilization		32.8%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	77	47	131	107	7
Future Volume (vph)	41	77	47	131	107	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
Frt	0.912				0.992	
Flt Protected	0.983			0.987		
Satd. Flow (prot)	1688	0	0	1859	1868	0
Flt Permitted	0.983			0.987		
Satd. Flow (perm)	1688	0	0	1859	1868	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	385.1			591.4	319.9	
Travel Time (s)	28.9			44.4	24.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	41	77	47	131	107	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	118	0	0	178	114	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)	24	14	24			14
Sign Control	Stop			Free	Free	

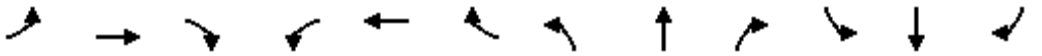
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	77	47	131	107	7
Future Volume (Veh/h)	41	77	47	131	107	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	77	47	131	107	7
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	336	110	114			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	336	110	114			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	92	97			
cM capacity (veh/h)	639	943	1475			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	118	178	114
Volume Left	41	47	0
Volume Right	77	0	7
cSH	809	1475	1700
Volume to Capacity	0.15	0.03	0.07
Queue Length 95th (m)	3.9	0.7	0.0
Control Delay (s)	10.2	2.2	0.0
Lane LOS	B	A	
Approach Delay (s)	10.2	2.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		



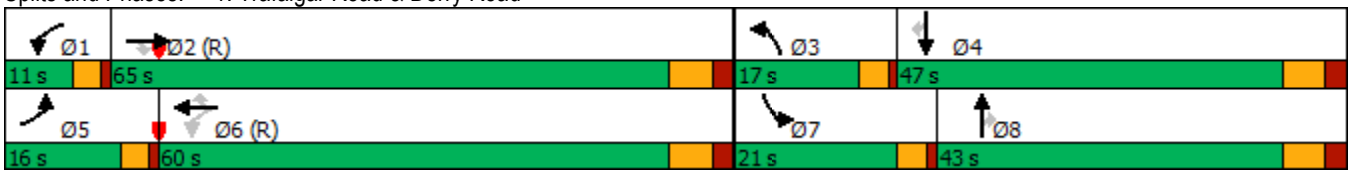
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
Future Volume (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3026	4476	1601	1772	4565	1633	3471	4433	1633	3506	4476	1420
Flt Permitted	0.950			0.162			0.950			0.950		
Satd. Flow (perm)	3026	4476	1601	302	4565	1633	3471	4433	1633	3506	4476	1420
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			235			184			124			124
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	17%	3%	2%	3%	1%	0%	2%	4%	0%	1%	3%	15%
Adj. Flow (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

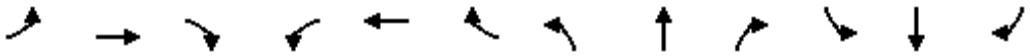
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2	6		6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	16.0	65.0	65.0	11.0	60.0	60.0	17.0	43.0	43.0	21.0	47.0	47.0
Total Split (%)	11.4%	46.4%	46.4%	7.9%	42.9%	42.9%	12.1%	30.7%	30.7%	15.0%	33.6%	33.6%
Maximum Green (s)	12.0	58.1	58.1	7.0	53.1	53.1	13.0	36.2	36.2	17.0	40.2	40.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	12.4	62.6	62.6	66.1	56.0	56.0	13.9	38.1	38.1	17.8	42.1	42.1
Actuated g/C Ratio	0.09	0.45	0.45	0.47	0.40	0.40	0.10	0.27	0.27	0.13	0.30	0.30
v/c Ratio	0.64	0.53	0.28	0.30	0.80	0.34	0.65	0.83	0.10	0.77	0.78	0.22
Control Delay	69.0	37.2	12.5	15.6	34.8	9.4	86.6	42.0	0.8	71.3	49.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	37.2	12.5	15.6	34.8	9.4	86.6	42.0	0.8	71.3	49.5	6.0
LOS	E	D	B	B	C	A	F	D	A	E	D	A
Approach Delay		36.9			30.4			48.1			51.1	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 40 (29%), Referenced to phase 2:EBT and 6:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 40.9		Intersection LOS: D	
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

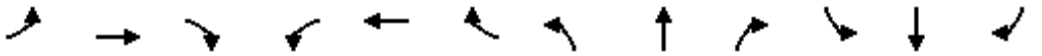
Splits and Phases: 1: Trafalgar Road & Derry Road





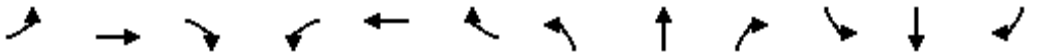
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
v/c Ratio	0.64	0.53	0.28	0.30	0.80	0.34	0.65	0.83	0.10	0.77	0.78	0.22
Control Delay	69.0	37.2	12.5	15.6	34.8	9.4	86.6	42.0	0.8	71.3	49.5	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.0	37.2	12.5	15.6	34.8	9.4	86.6	42.0	0.8	71.3	49.5	6.0
Queue Length 50th (m)	23.8	106.5	11.5	6.7	155.5	19.5	27.3	109.5	0.7	47.8	110.2	0.0
Queue Length 95th (m)	36.2	125.4	34.9	12.1	171.0	36.4	46.5	129.6	0.8	64.4	130.0	12.1
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	300.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	280	2000	845	228	1825	763	347	1209	535	450	1349	514
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.53	0.28	0.30	0.80	0.34	0.65	0.83	0.10	0.76	0.78	0.22

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
Future Volume (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	1.00	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3026	4476	1601	1772	4565	1633	3471	4433	1633	3506	4476	1420
Flt Permitted	0.95	1.00	1.00	0.16	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3026	4476	1601	303	4565	1633	3471	4433	1633	3506	4476	1420
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	171	1058	235	69	1459	259	225	1000	52	342	1046	115
RTOR Reduction (vph)	0	0	131	0	0	111	0	0	38	0	0	80
Lane Group Flow (vph)	171	1058	104	69	1459	148	225	1000	14	342	1046	35
Heavy Vehicles (%)	17%	3%	2%	3%	1%	0%	2%	4%	0%	1%	3%	15%
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6			8			4
Actuated Green, G (s)	11.4	59.7	59.7	59.5	53.9	53.9	12.9	36.2	36.2	16.8	40.1	40.1
Effective Green, g (s)	12.4	61.7	61.7	61.5	55.9	55.9	13.9	38.2	38.2	17.8	42.1	42.1
Actuated g/C Ratio	0.09	0.44	0.44	0.44	0.40	0.40	0.10	0.27	0.27	0.13	0.30	0.30
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	268	1972	705	202	1822	652	344	1209	445	445	1345	427
v/s Ratio Prot	c0.06	0.24		0.02	c0.32		0.06	0.23		c0.10	c0.23	
v/s Ratio Perm			0.06	0.13		0.09			0.01			0.02
v/c Ratio	0.64	0.54	0.15	0.34	0.80	0.23	0.65	0.83	0.03	0.77	0.78	0.08
Uniform Delay, d1	61.6	28.7	23.4	23.8	37.1	27.8	60.7	47.8	37.3	59.1	44.7	35.1
Progression Factor	0.95	1.26	4.03	0.73	0.83	0.93	1.28	0.75	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	1.0	0.4	1.9	3.5	0.7	5.3	4.8	0.1	9.1	3.4	0.2
Delay (s)	62.9	37.1	94.8	19.3	34.4	26.7	83.1	40.5	37.4	68.2	48.1	35.3
Level of Service	E	D	F	B	C	C	F	D	D	E	D	D
Approach Delay (s)		49.4			32.7			47.9			51.7	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



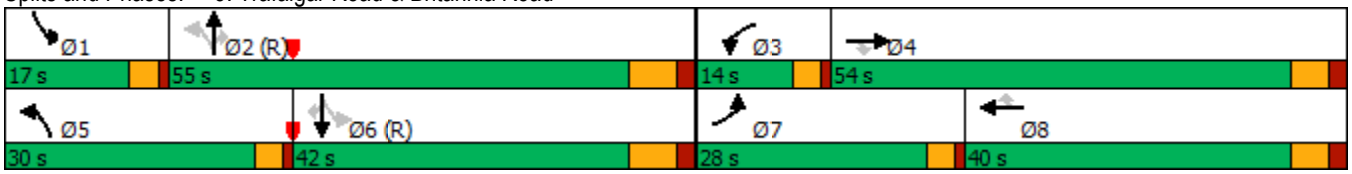
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
Future Volume (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	1		1	1		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3404	4520	1617	3541	4565	1601	1772	4520	1633	1772	4433	1585
Flt Permitted	0.950			0.950			0.097			0.105		
Satd. Flow (perm)	3404	4520	1617	3541	4565	1601	181	4520	1633	196	4433	1585
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			239			156			149			331
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	2%	1%	0%	1%	2%	3%	2%	0%	3%	4%	3%
Adj. Flow (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
Shared Lane Traffic (%)												
Lane Group Flow (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
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)		7.4			7.4			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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

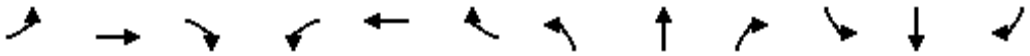
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	28.0	54.0	54.0	14.0	40.0	40.0	30.0	55.0	55.0	17.0	42.0	42.0
Total Split (%)	20.0%	38.6%	38.6%	10.0%	28.6%	28.6%	21.4%	39.3%	39.3%	12.1%	30.0%	30.0%
Maximum Green (s)	24.0	48.0	48.0	10.0	34.0	34.0	26.0	48.0	48.0	13.0	35.0	35.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	24.6	49.9	49.9	10.6	35.9	35.9	69.5	50.8	50.8	54.9	39.2	39.2
Actuated g/C Ratio	0.18	0.36	0.36	0.08	0.26	0.26	0.50	0.36	0.36	0.39	0.28	0.28
v/c Ratio	0.90	0.56	0.33	0.56	0.81	0.27	0.92	0.85	0.31	0.86	0.78	0.57
Control Delay	75.5	37.9	4.9	94.0	37.6	2.5	73.2	28.0	2.3	69.6	56.2	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.5	37.9	4.9	94.0	37.6	2.5	73.2	28.0	2.3	69.6	56.2	20.6
LOS	E	D	A	F	D	A	E	C	A	E	E	C
Approach Delay		45.2			40.4			33.2			49.0	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 85 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 41.6		Intersection LOS: D	
Intersection Capacity Utilization 87.7%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road

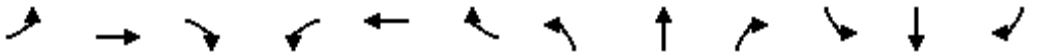




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
v/c Ratio	0.90	0.56	0.33	0.56	0.81	0.27	0.92	0.85	0.31	0.86	0.78	0.57
Control Delay	75.5	37.9	4.9	94.0	37.6	2.5	73.2	28.0	2.3	69.6	56.2	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.5	37.9	4.9	94.0	37.6	2.5	73.2	28.0	2.3	69.6	56.2	20.6
Queue Length 50th (m)	75.7	83.3	0.0	22.9	112.2	2.4	54.5	153.3	2.1	41.7	92.6	18.3
Queue Length 95th (m)	#104.8	99.6	17.3	34.1	125.7	3.2	#125.5	112.4	0.4	#81.9	123.4	57.4
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	607	1614	731	278	1173	527	397	1639	687	234	1241	682
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.56	0.33	0.54	0.80	0.27	0.87	0.85	0.31	0.85	0.78	0.57

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
Future Volume (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3404	4520	1617	3541	4565	1601	1772	4520	1633	1772	4433	1585
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	3404	4520	1617	3541	4565	1601	181	4520	1633	195	4433	1585
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	538	903	239	151	943	144	345	1391	211	198	963	387
RTOR Reduction (vph)	0	0	154	0	0	107	0	0	95	0	0	238
Lane Group Flow (vph)	538	903	85	151	943	37	345	1391	116	198	963	149
Heavy Vehicles (%)	4%	2%	1%	0%	1%	2%	3%	2%	0%	3%	4%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		6
Actuated Green, G (s)	23.6	47.9	47.9	9.6	33.9	33.9	65.5	48.8	48.8	49.9	37.2	37.2
Effective Green, g (s)	24.6	49.9	49.9	10.6	35.9	35.9	66.5	50.8	50.8	51.9	39.2	39.2
Actuated g/C Ratio	0.18	0.36	0.36	0.08	0.26	0.26	0.48	0.36	0.36	0.37	0.28	0.28
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	598	1611	576	268	1170	410	373	1640	592	226	1241	443
v/s Ratio Prot	c0.16	0.20		0.04	c0.21		c0.17	0.31		0.09	0.22	
v/s Ratio Perm			0.05			0.02	c0.27		0.07	0.24		0.09
v/c Ratio	0.90	0.56	0.15	0.56	0.81	0.09	0.92	0.85	0.20	0.88	0.78	0.34
Uniform Delay, d1	56.5	36.2	30.6	62.5	48.8	39.6	42.0	41.1	30.6	35.1	46.4	40.1
Progression Factor	1.00	1.00	1.00	1.38	0.65	0.27	1.17	0.54	0.12	1.11	1.09	2.25
Incremental Delay, d2	16.3	0.7	0.2	2.5	4.4	0.2	27.4	5.4	0.7	27.7	4.5	1.9
Delay (s)	72.8	37.0	30.9	88.6	36.3	10.9	76.4	27.6	4.3	66.8	55.2	91.8
Level of Service	E	D	C	F	D	B	E	C	A	E	E	F
Approach Delay (s)		47.6			39.7			33.8			65.8	
Approach LOS		D			D			C			E	

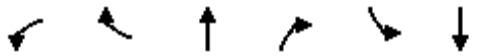
Intersection Summary			
HCM 2000 Control Delay	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	293	89	1399	365	281	1378
Future Volume (vph)	293	89	1399	365	281	1378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	110.0	0.0		100.0	100.0	
Storage Lanes	1	1		1	1	
Taper Length (m)	20.0				50.0	
Lane Util. Factor	1.00	1.00	*0.80	1.00	1.00	*0.80
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1789	1601	4520	1601	1789	4520
Flt Permitted	0.950				0.092	
Satd. Flow (perm)	1789	1601	4520	1601	173	4520
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		89		365		
Link Speed (k/h)	48		60			60
Link Distance (m)	184.6		368.2			594.7
Travel Time (s)	13.8		22.1			35.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	89	1399	365	281	1378
Shared Lane Traffic (%)						
Lane Group Flow (vph)	293	89	1399	365	281	1378
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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)	24	14		14	24	
Number of Detectors	1	1	2	1	1	2
Detector Template	Left	Right	Thru	Right	Left	Thru
Leading Detector (m)	6.1	6.1	30.5	6.1	6.1	30.5
Trailing Detector (m)	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
Detector 1 Size(m)	6.1	6.1	1.8	6.1	6.1	1.8
Detector 1 Type	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
Detector 1 Queue (s)	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
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	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	3		2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8	3	2	2	1	6
Switch Phase						
Minimum Initial (s)	10.0	5.0	20.0	20.0	7.0	20.0
Minimum Split (s)	40.0	11.0	26.0	26.0	13.0	26.0
Total Split (s)	47.0	47.0	61.0	61.0	32.0	93.0
Total Split (%)	33.6%	33.6%	43.6%	43.6%	22.9%	66.4%
Maximum Green (s)	41.0	41.0	55.0	55.0	28.0	87.0
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	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	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max
Walk Time (s)	7.0		7.0	7.0		7.0
Flash Dont Walk (s)	27.0		9.0	9.0		9.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	28.3	28.3	74.4	74.4	101.7	99.7
Actuated g/C Ratio	0.20	0.20	0.53	0.53	0.73	0.71
v/c Ratio	0.81	0.23	0.58	0.36	0.76	0.43
Control Delay	70.2	9.1	23.9	6.5	38.7	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	9.1	23.9	6.5	38.7	9.4
LOS	E	A	C	A	D	A
Approach Delay	56.0		20.3			14.4
Approach LOS	E		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 13 (9%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			
* User Entered Value			

Splits and Phases: 106: Trafalgar Road & Collector L



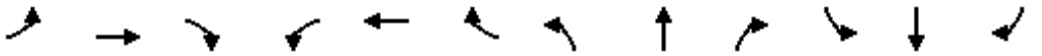
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	293	89	1399	365	281	1378
v/c Ratio	0.81	0.23	0.58	0.36	0.76	0.43
Control Delay	70.2	9.1	23.9	6.5	38.7	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.2	9.1	23.9	6.5	38.7	9.4
Queue Length 50th (m)	78.1	0.0	108.0	18.4	44.6	60.0
Queue Length 95th (m)	103.0	13.2	147.0	42.4	76.0	86.2
Internal Link Dist (m)	160.6		344.2			570.7
Turn Bay Length (m)	110.0			100.0	100.0	
Base Capacity (vph)	523	531	2401	1021	454	3218
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.17	0.58	0.36	0.62	0.43

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	293	89	1399	365	281	1378
Future Volume (vph)	293	89	1399	365	281	1378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	4.0	6.0
Lane Util. Factor	1.00	1.00	*0.80	1.00	1.00	*0.80
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1789	1601	4520	1601	1789	4520
Flt Permitted	0.95	1.00	1.00	1.00	0.09	1.00
Satd. Flow (perm)	1789	1601	4520	1601	173	4520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	293	89	1399	365	281	1378
RTOR Reduction (vph)	0	71	0	171	0	0
Lane Group Flow (vph)	293	18	1399	194	281	1378
Turn Type	Perm	Perm	NA	Perm	pm+pt	NA
Protected Phases			2		1	6
Permitted Phases	8	3		2	6	
Actuated Green, G (s)	28.3	28.3	74.4	74.4	99.7	99.7
Effective Green, g (s)	28.3	28.3	74.4	74.4	99.7	99.7
Actuated g/C Ratio	0.20	0.20	0.53	0.53	0.71	0.71
Clearance Time (s)	6.0	6.0	6.0	6.0	4.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	361	323	2402	850	369	3218
v/s Ratio Prot			0.31		c0.12	0.30
v/s Ratio Perm	c0.16	0.01		0.12	c0.43	
v/c Ratio	0.81	0.06	0.58	0.23	0.76	0.43
Uniform Delay, d1	53.3	45.1	22.3	17.5	31.3	8.3
Progression Factor	1.00	1.00	0.93	2.31	1.00	1.00
Incremental Delay, d2	13.0	0.1	0.9	0.5	9.0	0.4
Delay (s)	66.3	45.1	21.7	41.0	40.2	8.8
Level of Service	E	D	C	D	D	A
Approach Delay (s)	61.4		25.7			14.1
Approach LOS	E		C			B

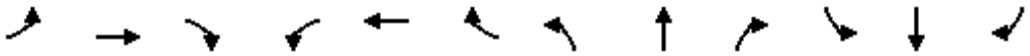
Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	313	96	70	157	102	72	32	54	103	108	153
Future Volume (vph)	242	313	96	70	157	102	72	32	54	103	108	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	10.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.941			0.954			0.943	
Flt Protected	0.950			0.950				0.978			0.986	
Satd. Flow (prot)	1789	1818	0	1789	1772	0	0	1757	0	0	1751	0
Flt Permitted	0.950			0.950				0.978			0.986	
Satd. Flow (perm)	1789	1818	0	1789	1772	0	0	1757	0	0	1751	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		184.6			422.4			376.5			596.3	
Travel Time (s)		13.8			31.7			28.2			44.7	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	242	313	96	70	157	102	72	32	54	103	108	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	242	409	0	70	259	0	0	158	0	0	364	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			0.0			0.0	
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
Sign Control		Stop			Stop			Stop			Stop	

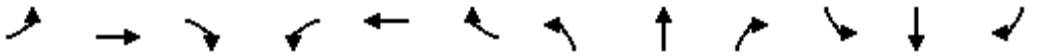
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	242	313	96	70	157	102	72	32	54	103	108	153
Future Volume (vph)	242	313	96	70	157	102	72	32	54	103	108	153
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	242	313	96	70	157	102	72	32	54	103	108	153

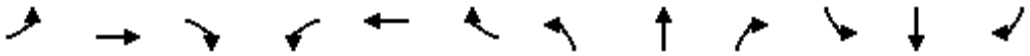
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	242	409	70	259	158	364
Volume Left (vph)	242	0	70	0	72	103
Volume Right (vph)	0	96	0	102	54	153
Hadj (s)	0.53	-0.13	0.53	-0.24	-0.08	-0.16
Departure Headway (s)	7.7	7.0	8.2	7.4	7.6	6.8
Degree Utilization, x	0.52	0.80	0.16	0.54	0.33	0.69
Capacity (veh/h)	454	499	410	450	426	504
Control Delay (s)	17.6	31.4	11.6	17.5	14.4	23.7
Approach Delay (s)	26.3		16.2		14.4	23.7
Approach LOS	D		C		B	C

Intersection Summary				
Delay	22.2			
Level of Service	C			
Intersection Capacity Utilization	61.0%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	331	8	30	269	47	8	29	16	33	46	64
Future Volume (vph)	98	331	8	30	269	47	8	29	16	33	46	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.978			0.947			0.913	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1876	0	1789	1842	0	1789	1784	0	1789	1720	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1789	1876	0	1789	1842	0	1789	1784	0	1789	1720	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		422.4			514.0			400.7			591.4	
Travel Time (s)		31.7			38.6			30.1			44.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	98	331	8	30	269	47	8	29	16	33	46	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	339	0	30	316	0	8	45	0	33	110	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
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	331	8	30	269	47	8	29	16	33	46	64
Future Volume (Veh/h)	98	331	8	30	269	47	8	29	16	33	46	64
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	98	331	8	30	269	47	8	29	16	33	46	64
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	316			339			947	907	335	910	888	292
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316			339			947	907	335	910	888	292
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			98			95	88	98	84	82	91
cM capacity (veh/h)	1244			1220			175	248	707	210	254	747

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	98	339	30	316	8	45	33	110
Volume Left	98	0	30	0	8	0	33	0
Volume Right	0	8	0	47	0	16	0	64
cSH	1244	1700	1220	1700	175	322	210	413
Volume to Capacity	0.08	0.20	0.02	0.19	0.05	0.14	0.16	0.27
Queue Length 95th (m)	1.9	0.0	0.6	0.0	1.1	3.7	4.1	8.1
Control Delay (s)	8.1	0.0	8.0	0.0	26.5	18.0	25.3	16.9
Lane LOS	A		A		D	C	D	C
Approach Delay (s)	1.8		0.7		19.3		18.8	
Approach LOS					C		C	

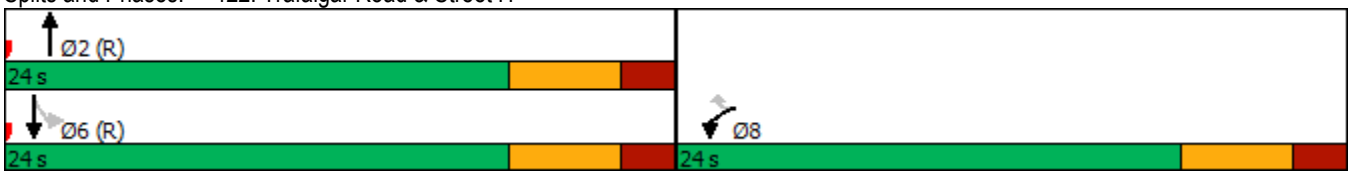
Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	40.9%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	39	1437	56	38	1638
Future Volume (vph)	25	39	1437	56	38	1638
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0	0.0		50.0	50.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1789	1601	5111	0	1789	5142
Flt Permitted	0.950				0.222	
Satd. Flow (perm)	1789	1601	5111	0	418	5142
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		5	14			
Link Speed (k/h)	48		48			48
Link Distance (m)	189.3		594.7			275.8
Travel Time (s)	14.2		44.6			20.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	39	1437	56	38	1638
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	39	1493	0	38	1638
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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)	97	97		97	97	
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Minimum Split (s)	24.0	24.0	24.0		24.0	24.0
Total Split (s)	24.0	24.0	24.0		24.0	24.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0		18.0	18.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	18.0	18.0	18.0		18.0	18.0
Actuated g/C Ratio	0.38	0.38	0.38		0.38	0.38
v/c Ratio	0.04	0.06	0.78		0.24	0.85

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Control Delay	9.8	9.2	16.5		15.3	19.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	9.8	9.2	16.5		15.3	19.7
LOS	A	A	B		B	B
Approach Delay	9.4		16.5			19.6
Approach LOS	A		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 48			
Actuated Cycle Length: 48			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 45.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 422: Trafalgar Road & Street H



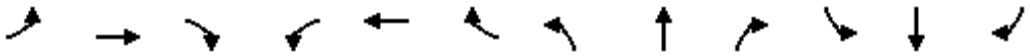
Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	25	39	1493	38	1638
v/c Ratio	0.04	0.06	0.78	0.24	0.85
Control Delay	9.8	9.2	16.5	15.3	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	9.2	16.5	15.3	19.7
Queue Length 50th (m)	1.3	1.8	38.6	2.1	44.6
Queue Length 95th (m)	4.6	6.0	52.9	7.9	#63.9
Internal Link Dist (m)	165.3		570.7		251.8
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	670	603	1925	156	1928
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.06	0.78	0.24	0.85

Intersection Summary

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

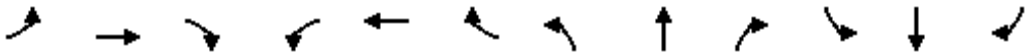
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	39	1437	56	38	1638
Future Volume (vph)	25	39	1437	56	38	1638
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1789	1601	5113		1789	5142
Flt Permitted	0.95	1.00	1.00		0.22	1.00
Satd. Flow (perm)	1789	1601	5113		419	5142
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	39	1437	56	38	1638
RTOR Reduction (vph)	0	3	9	0	0	0
Lane Group Flow (vph)	25	36	1484	0	38	1638
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	18.0	18.0	18.0		18.0	18.0
Effective Green, g (s)	18.0	18.0	18.0		18.0	18.0
Actuated g/C Ratio	0.38	0.38	0.38		0.38	0.38
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	670	600	1917		157	1928
v/s Ratio Prot	0.01		0.29			c0.32
v/s Ratio Perm		c0.02			0.09	
v/c Ratio	0.04	0.06	0.77		0.24	0.85
Uniform Delay, d1	9.5	9.6	13.2		10.3	13.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.2	3.1		3.6	4.9
Delay (s)	9.6	9.8	16.3		13.9	18.7
Level of Service	A	A	B		B	B
Approach Delay (s)	9.7		16.3			18.6
Approach LOS	A		B			B

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	76	54	0	3	83	19	65	14	88	64
Future Volume (vph)	17	0	76	54	0	3	83	19	65	14	88	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.890			0.993			0.947			0.948	
Flt Protected		0.991			0.955			0.976			0.996	
Satd. Flow (prot)	0	1661	0	0	1786	0	0	1741	0	0	1778	0
Flt Permitted		0.991			0.955			0.976			0.996	
Satd. Flow (perm)	0	1661	0	0	1786	0	0	1741	0	0	1778	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		189.3			385.1			596.3			279.2	
Travel Time (s)		14.2			28.9			44.7			20.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	0	76	54	0	3	83	19	65	14	88	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	0	0	57	0	0	167	0	0	166	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)	97		97	97		97	97		97	97		97
Sign Control		Stop			Stop			Stop			Stop	

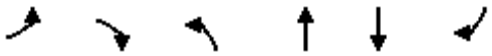
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	17	0	76	54	0	3	83	19	65	14	88	64
Future Volume (vph)	17	0	76	54	0	3	83	19	65	14	88	64
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	17	0	76	54	0	3	83	19	65	14	88	64

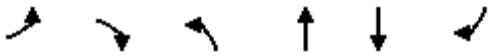
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	93	57	167	166
Volume Left (vph)	17	54	83	14
Volume Right (vph)	76	3	65	64
Hadj (s)	-0.42	0.19	-0.10	-0.18
Departure Headway (s)	4.3	4.9	4.3	4.3
Degree Utilization, x	0.11	0.08	0.20	0.20
Capacity (veh/h)	766	668	793	802
Control Delay (s)	7.8	8.4	8.4	8.3
Approach Delay (s)	7.8	8.4	8.4	8.3
Approach LOS	A	A	A	A

Intersection Summary			
Delay	8.3		
Level of Service	A		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	31	61	92	93	25
Future Volume (vph)	21	31	61	92	93	25
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	0.920				0.971	
Flt Protected	0.980			0.980		
Satd. Flow (prot)	1698	0	0	1846	1829	0
Flt Permitted	0.980			0.980		
Satd. Flow (perm)	1698	0	0	1846	1829	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	385.1			591.4	319.9	
Travel Time (s)	28.9			44.4	24.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	31	61	92	93	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	153	118	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)	97	97	97			97
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.9%		ICU Level of Service A	
Analysis Period (min) 15			

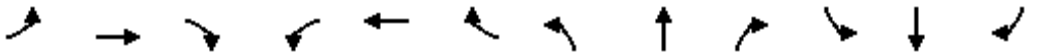


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	21	31	61	92	93	25
Future Volume (vph)	21	31	61	92	93	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	31	61	92	93	25

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	52	153	118
Volume Left (vph)	21	61	0
Volume Right (vph)	31	0	25
Hadj (s)	-0.24	0.11	-0.09
Departure Headway (s)	4.2	4.2	4.1
Degree Utilization, x	0.06	0.18	0.13
Capacity (veh/h)	796	826	863
Control Delay (s)	7.5	8.2	7.7
Approach Delay (s)	7.5	8.2	7.7
Approach LOS	A	A	A

Intersection Summary			
Delay	7.9		
Level of Service	A		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

2041 Future Total



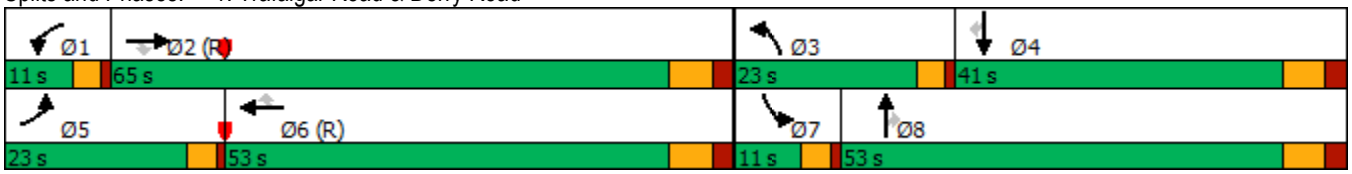
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
Future Volume (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			184			154			124			155
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

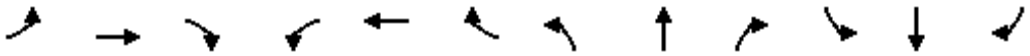
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	23.0	65.0	65.0	11.0	53.0	53.0	23.0	53.0	53.0	11.0	41.0	41.0
Total Split (%)	16.4%	46.4%	46.4%	7.9%	37.9%	37.9%	16.4%	37.9%	37.9%	7.9%	29.3%	29.3%
Maximum Green (s)	19.0	58.1	58.1	7.0	46.1	46.1	19.0	46.2	46.2	7.0	34.2	34.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	19.0	64.5	64.5	8.0	49.1	49.1	19.5	48.2	48.2	8.0	36.7	36.7
Actuated g/C Ratio	0.14	0.46	0.46	0.06	0.35	0.35	0.14	0.34	0.34	0.06	0.26	0.26
v/c Ratio	0.67	0.95	0.26	0.12	0.55	0.56	0.72	0.90	0.03	0.43	0.53	0.04
Control Delay	81.1	32.1	5.2	69.6	41.1	27.9	62.7	52.5	0.1	70.6	46.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.1	32.1	5.2	69.6	41.1	27.9	62.7	52.5	0.1	70.6	46.3	0.1
LOS	F	C	A	E	D	C	E	D	A	E	D	A
Approach Delay		36.0			37.8			53.9			47.6	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 42.8		Intersection LOS: D	
Intersection Capacity Utilization 93.0%		ICU Level of Service F	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Trafalgar Road & Derry Road





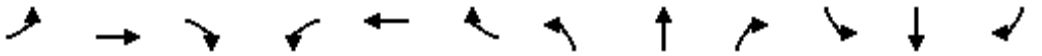
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
v/c Ratio	0.67	0.95	0.26	0.12	0.55	0.56	0.72	0.90	0.03	0.43	0.53	0.04
Control Delay	81.1	32.1	5.2	69.6	41.1	27.9	62.7	52.5	0.1	70.6	46.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.1	32.1	5.2	69.6	41.1	27.9	62.7	52.5	0.1	70.6	46.3	0.1
Queue Length 50th (m)	43.4	~212.0	5.0	3.6	70.2	40.9	47.6	169.7	0.0	12.0	64.1	0.0
Queue Length 95th (m)	m50.7	#273.6	m13.0	m7.8	81.6	61.6	68.5	190.2	m0.0	21.0	79.2	0.0
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	505	2124	851	202	1616	672	505	1587	643	202	1210	543
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.95	0.26	0.12	0.55	0.56	0.70	0.90	0.03	0.43	0.53	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

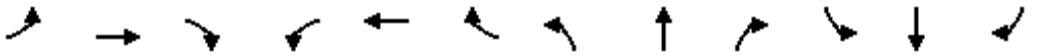
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
Future Volume (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	322	2012	221	25	886	376	353	1435	21	86	642	23
RTOR Reduction (vph)	0	0	101	0	0	100	0	0	14	0	0	17
Lane Group Flow (vph)	322	2012	120	25	886	276	353	1435	7	86	642	6
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	18.0	60.9	60.9	4.2	47.1	47.1	18.5	46.2	46.2	7.0	34.7	34.7
Effective Green, g (s)	19.0	62.9	62.9	5.2	49.1	49.1	19.5	48.2	48.2	8.0	36.7	36.7
Actuated g/C Ratio	0.14	0.45	0.45	0.04	0.35	0.35	0.14	0.34	0.34	0.06	0.26	0.26
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	480	2071	733	131	1617	572	493	1587	562	202	1208	428
v/s Ratio Prot	c0.09	c0.44		0.01	0.19		c0.10	c0.31		0.02	0.14	
v/s Ratio Perm			0.07			0.17			0.00			0.00
v/c Ratio	0.67	0.97	0.16	0.19	0.55	0.48	0.72	0.90	0.01	0.43	0.53	0.01
Uniform Delay, d1	57.5	37.7	22.9	65.4	36.5	35.5	57.6	43.7	30.2	63.8	44.3	38.3
Progression Factor	1.35	0.71	0.89	1.09	1.08	1.16	0.96	1.03	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	7.9	0.2	1.4	1.2	2.6	4.8	6.6	0.0	3.0	0.8	0.0
Delay (s)	79.9	34.5	20.5	72.5	40.6	43.9	60.4	51.7	30.2	66.8	45.1	38.3
Level of Service	E	C	C	E	D	D	E	D	C	E	D	D
Approach Delay (s)		39.0			42.2			53.1			47.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	93.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



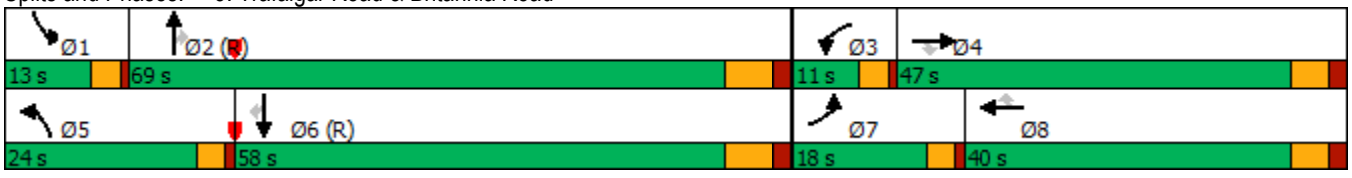
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
Future Volume (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253			156			124			196
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
Shared Lane Traffic (%)												
Lane Group Flow (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

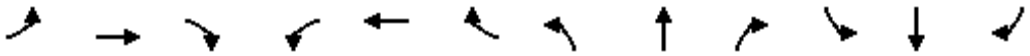
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	18.0	47.0	47.0	11.0	40.0	40.0	24.0	69.0	69.0	13.0	58.0	58.0
Total Split (%)	12.9%	33.6%	33.6%	7.9%	28.6%	28.6%	17.1%	49.3%	49.3%	9.3%	41.4%	41.4%
Maximum Green (s)	14.0	41.0	41.0	7.0	34.0	34.0	20.0	62.0	62.0	9.0	51.0	51.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	14.8	42.2	42.2	8.0	35.4	35.4	20.6	65.0	65.0	9.7	54.1	54.1
Actuated g/C Ratio	0.11	0.30	0.30	0.06	0.25	0.25	0.15	0.46	0.46	0.07	0.39	0.39
v/c Ratio	0.81	0.66	0.75	0.43	0.67	0.39	0.87	0.69	0.19	0.55	0.85	0.90
Control Delay	78.4	45.2	28.8	52.2	49.9	15.8	82.7	23.3	4.1	71.8	44.9	45.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	45.2	28.8	52.2	49.9	15.8	82.7	23.3	4.1	71.8	44.9	45.3
LOS	E	D	C	D	D	B	F	C	A	E	D	D
Approach Delay		46.3			43.5			34.7			46.6	
Approach LOS		D			D			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 90 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 42.6		Intersection LOS: D	
Intersection Capacity Utilization 80.9%		ICU Level of Service D	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road

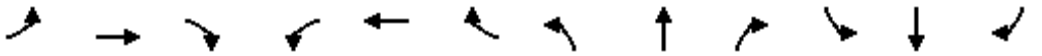




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
v/c Ratio	0.81	0.66	0.75	0.43	0.67	0.39	0.87	0.69	0.19	0.55	0.85	0.90
Control Delay	78.4	45.2	28.8	52.2	49.9	15.8	82.7	23.3	4.1	71.8	44.9	45.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	45.2	28.8	52.2	49.9	15.8	82.7	23.3	4.1	71.8	44.9	45.3
Queue Length 50th (m)	43.0	91.8	64.2	12.4	82.3	22.2	67.3	90.9	1.9	18.9	159.5	136.8
Queue Length 95th (m)	#63.4	109.4	108.2	m17.2	99.9	42.2	#90.9	105.0	9.0	29.9	182.7	#215.0
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	379	1416	676	202	1185	535	531	2141	824	252	1782	751
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.65	0.74	0.43	0.66	0.39	0.85	0.69	0.19	0.54	0.85	0.90

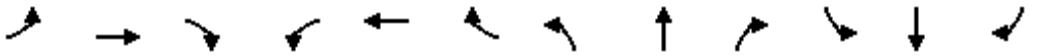
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
Future Volume (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	304	919	501	86	784	206	452	1478	158	135	1507	678
RTOR Reduction (vph)	0	0	177	0	0	117	0	0	66	0	0	120
Lane Group Flow (vph)	304	919	324	86	784	89	452	1478	92	135	1507	558
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	13.8	40.2	40.2	7.0	33.4	33.4	19.6	63.1	63.1	8.7	52.2	52.2
Effective Green, g (s)	14.8	42.2	42.2	8.0	35.4	35.4	20.6	65.1	65.1	9.7	54.2	54.2
Actuated g/C Ratio	0.11	0.30	0.30	0.06	0.25	0.25	0.15	0.46	0.46	0.07	0.39	0.39
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	374	1389	492	202	1165	412	521	2144	759	245	1785	632
v/s Ratio Prot	c0.09	c0.20		0.02	0.17		c0.13	0.32		0.04	0.33	
v/s Ratio Perm			0.20			0.05			0.06			c0.34
v/c Ratio	0.81	0.66	0.66	0.43	0.67	0.22	0.87	0.69	0.12	0.55	0.84	0.88
Uniform Delay, d1	61.2	42.7	42.6	63.8	47.1	41.3	58.4	29.5	21.2	63.0	39.1	39.9
Progression Factor	1.00	1.00	1.00	0.72	0.99	1.16	1.14	0.72	0.59	1.00	1.00	1.00
Incremental Delay, d2	12.6	1.6	4.3	1.4	1.9	0.5	13.6	1.7	0.3	2.7	5.1	16.4
Delay (s)	73.9	44.3	46.9	47.1	48.7	48.6	79.9	22.9	12.9	65.7	44.2	56.3
Level of Service	E	D	D	D	D	D	E	C	B	E	D	E
Approach Delay (s)		50.2			48.6			34.5			49.0	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



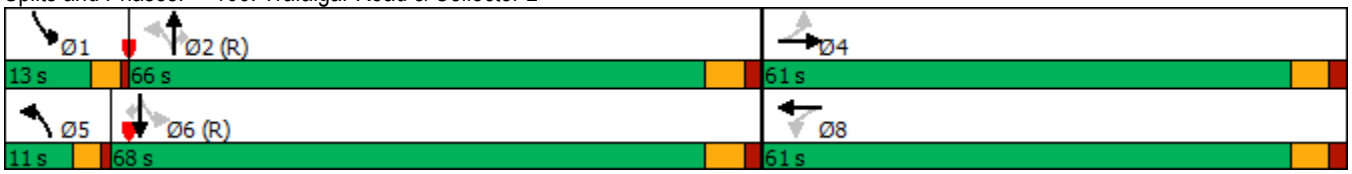
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	24	42	414	8	161	14	1998	207	74	1235	23
Future Volume (vph)	62	24	42	414	8	161	14	1998	207	74	1235	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	130.0		0.0	50.0		50.0	100.0		50.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	15.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt		0.905			0.857				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1739	0	1825	1646	0	1825	4611	1633	1825	4611	1633
Flt Permitted	0.601			0.714			0.136			0.054		
Satd. Flow (perm)	1155	1739	0	1372	1646	0	261	4611	1633	104	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			115				85			55
Link Speed (k/h)		48			48			60			60	
Link Distance (m)		441.2			184.6			368.2			591.7	
Travel Time (s)		33.1			13.8			22.1			35.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	62	24	42	414	8	161	14	1998	207	74	1235	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	62	66	0	414	169	0	14	1998	207	74	1235	23
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	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		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	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		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	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		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	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	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	40.0	40.0		40.0	40.0		11.0	26.0	26.0	13.0	26.0	26.0
Total Split (s)	61.0	61.0		61.0	61.0		11.0	66.0	66.0	13.0	68.0	68.0
Total Split (%)	43.6%	43.6%		43.6%	43.6%		7.9%	47.1%	47.1%	9.3%	48.6%	48.6%
Maximum Green (s)	55.0	55.0		55.0	55.0		7.0	60.0	60.0	9.0	62.0	62.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		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		4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	27.0	27.0		27.0	27.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	0
Act Effct Green (s)	47.5	47.5		47.5	47.5		78.4	70.8	70.8	81.7	76.1	76.1
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.56	0.51	0.51	0.58	0.54	0.54
v/c Ratio	0.16	0.11		0.89	0.27		0.06	0.86	0.24	0.47	0.49	0.03
Control Delay	31.0	12.8		65.1	11.3		17.6	29.7	14.0	42.6	17.5	3.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	12.8		65.1	11.3		17.6	29.7	14.0	42.6	17.5	3.6
LOS	C	B		E	B		B	C	B	D	B	A
Approach Delay		21.6			49.5			28.2			18.6	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 27.9 Intersection LOS: C
Intersection Capacity Utilization 94.0% ICU Level of Service F
Analysis Period (min) 15
* User Entered Value

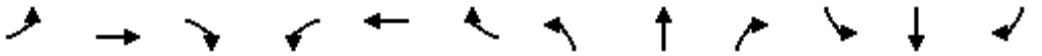
Splits and Phases: 106: Trafalgar Road & Collector L



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	62	66	414	169	14	1998	207	74	1235	23
v/c Ratio	0.16	0.11	0.89	0.27	0.06	0.86	0.24	0.47	0.49	0.03
Control Delay	31.0	12.8	65.1	11.3	17.6	29.7	14.0	42.6	17.5	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	12.8	65.1	11.3	17.6	29.7	14.0	42.6	17.5	3.6
Queue Length 50th (m)	11.8	4.4	106.3	10.0	1.6	99.9	13.3	10.0	28.5	0.0
Queue Length 95th (m)	21.3	13.8	142.3	24.6	m3.0	#269.7	33.0	24.6	126.7	2.8
Internal Link Dist (m)		417.2		160.6		344.2			567.7	
Turn Bay Length (m)	50.0		130.0		50.0		50.0	100.0		50.0
Base Capacity (vph)	453	708	539	716	224	2330	867	171	2507	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.09	0.77	0.24	0.06	0.86	0.24	0.43	0.49	0.03

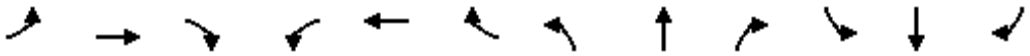
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



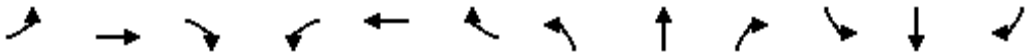
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	24	42	414	8	161	14	1998	207	74	1235	23
Future Volume (vph)	62	24	42	414	8	161	14	1998	207	74	1235	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	0.90		1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	1738		1825	1647		1825	4611	1633	1825	4611	1633
Flt Permitted	0.60	1.00		0.71	1.00		0.14	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	1155	1738		1372	1647		262	4611	1633	104	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	62	24	42	414	8	161	14	1998	207	74	1235	23
RTOR Reduction (vph)	0	28	0	0	76	0	0	0	43	0	0	11
Lane Group Flow (vph)	62	38	0	414	93	0	14	1998	164	74	1235	12
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	47.5	47.5		47.5	47.5		72.7	69.9	69.9	80.3	73.7	73.7
Effective Green, g (s)	47.5	47.5		47.5	47.5		72.7	69.9	69.9	80.3	73.7	73.7
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.52	0.50	0.50	0.57	0.53	0.53
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	391	589		465	558		167	2302	815	140	2427	859
v/s Ratio Prot		0.02			0.06		0.00	c0.43		c0.02	0.27	
v/s Ratio Perm	0.05			c0.30			0.04		0.10	0.28		0.01
v/c Ratio	0.16	0.06		0.89	0.17		0.08	0.87	0.20	0.53	0.51	0.01
Uniform Delay, d1	32.3	31.2		43.8	32.4		17.3	31.0	19.5	27.5	21.4	15.8
Progression Factor	1.00	1.00		1.00	1.00		1.17	0.80	1.01	1.83	0.76	1.00
Incremental Delay, d2	0.2	0.0		18.8	0.1		0.2	3.5	0.4	3.5	0.7	0.0
Delay (s)	32.5	31.3		62.5	32.5		20.5	28.4	20.1	53.8	17.1	15.8
Level of Service	C	C		E	C		C	C	C	D	B	B
Approach Delay (s)		31.9			53.8			27.6			19.2	
Approach LOS		C			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	219	22	34	278	65	88	52	53	119	90	216
Future Volume (vph)	75	219	22	34	278	65	88	52	53	119	90	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	10.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.972			0.963			0.931	
Flt Protected	0.950			0.950				0.978			0.986	
Satd. Flow (prot)	1772	1854	0	1825	1809	0	0	1713	0	0	1261	0
Flt Permitted	0.950			0.950				0.978			0.986	
Satd. Flow (perm)	1772	1854	0	1825	1809	0	0	1713	0	0	1261	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		184.6			422.4			376.5			593.2	
Travel Time (s)		13.8			31.7			28.2			44.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	2%	4%	0%	4%	0%	7%	9%	0%	0%	13%	73%
Adj. Flow (vph)	75	219	22	34	278	65	88	52	53	119	90	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	241	0	34	343	0	0	193	0	0	425	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			0.0			0.0	
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
Sign Control		Stop			Stop			Stop			Stop	

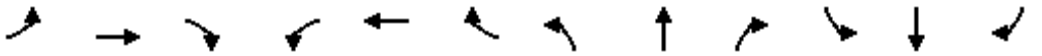
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	75	219	22	34	278	65	88	52	53	119	90	216
Future Volume (vph)	75	219	22	34	278	65	88	52	53	119	90	216
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	219	22	34	278	65	88	52	53	119	90	216

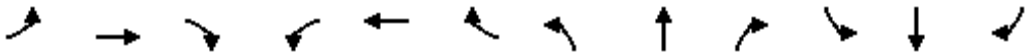
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	75	241	34	343	193	425
Volume Left (vph)	75	0	34	0	88	119
Volume Right (vph)	0	22	0	65	53	216
Hadj (s)	0.55	-0.03	0.50	-0.08	0.02	0.43
Departure Headway (s)	8.5	7.9	8.2	7.6	7.7	7.3
Degree Utilization, x	0.18	0.53	0.08	0.73	0.41	0.86
Capacity (veh/h)	382	418	413	450	426	474
Control Delay (s)	12.1	18.2	10.7	27.2	16.0	40.8
Approach Delay (s)	16.7		25.7		16.0	40.8
Approach LOS	C		D		C	E

Intersection Summary				
Delay	27.0			
Level of Service	D			
Intersection Capacity Utilization	60.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	246	45	30	255	56	31	99	47	51	77	73
Future Volume (vph)	147	246	45	30	255	56	31	99	47	51	77	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.977			0.973			0.952			0.927	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1840	0	1825	1839	0	1825	1804	0	1825	1746	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1789	1840	0	1825	1839	0	1825	1804	0	1825	1746	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		422.4			514.0			400.7			594.4	
Travel Time (s)		31.7			38.6			30.1			44.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	0%	2%	0%	0%	2%	2%
Adj. Flow (vph)	147	246	45	30	255	56	31	99	47	51	77	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	291	0	30	311	0	31	146	0	51	150	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
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	246	45	30	255	56	31	99	47	51	77	73
Future Volume (Veh/h)	147	246	45	30	255	56	31	99	47	51	77	73
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	147	246	45	30	255	56	31	99	47	51	77	73
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	311			291			989	934	268	980	928	283
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	311			291			989	934	268	980	928	283
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88			98			77	57	94	61	67	90
cM capacity (veh/h)	1249			1282			137	229	775	130	231	756

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	147	291	30	311	31	146	51	150
Volume Left	147	0	30	0	31	0	51	0
Volume Right	0	45	0	56	0	47	0	73
cSH	1249	1700	1282	1700	137	296	130	349
Volume to Capacity	0.12	0.17	0.02	0.18	0.23	0.49	0.39	0.43
Queue Length 95th (m)	3.0	0.0	0.5	0.0	6.3	19.5	12.6	15.9
Control Delay (s)	8.3	0.0	7.9	0.0	38.7	28.4	49.7	22.9
Lane LOS	A		A		E	D	E	C
Approach Delay (s)	2.8		0.7		30.2		29.7	
Approach LOS					D		D	

Intersection Summary				
Average Delay	11.0			
Intersection Capacity Utilization	50.1%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	104	2234	23	21	1275
Future Volume (vph)	47	104	2234	23	21	1275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0	0.0		50.0	50.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Frt		0.850	0.998			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1789	1601	5132	0	1789	5142
Flt Permitted	0.950				0.058	
Satd. Flow (perm)	1789	1601	5132	0	109	5142
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		2	1			
Link Speed (k/h)	48		60			60
Link Distance (m)	188.7		591.7			278.9
Travel Time (s)	14.2		35.5			16.7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	104	2234	23	21	1275
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	104	2257	0	21	1275
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	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
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	3		2			6
Permitted Phases		3			6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3	3	2		6	6
Switch Phase						
Minimum Initial (s)	20.0	20.0	20.0		10.0	10.0
Minimum Split (s)	26.0	26.0	26.0		40.0	40.0
Total Split (s)	64.0	64.0	76.0		76.0	76.0
Total Split (%)	45.7%	45.7%	54.3%		54.3%	54.3%
Maximum Green (s)	58.0	58.0	70.0		70.0	70.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	9.0	9.0	9.0		27.0	27.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	20.0	20.0	108.0		108.0	108.0
Actuated g/C Ratio	0.14	0.14	0.77		0.77	0.77
v/c Ratio	0.18	0.45	0.57		0.25	0.32
Control Delay	55.0	60.9	10.8		11.2	2.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	55.0	60.9	10.8		11.2	2.7
LOS	E	E	B		B	A
Approach Delay	59.1		10.8			2.8
Approach LOS	E		B			A

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 422: Trafalgar Road & Street H

Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	47	104	2257	21	1275
v/c Ratio	0.18	0.45	0.57	0.25	0.32
Control Delay	55.0	60.9	10.8	11.2	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	60.9	10.8	11.2	2.7
Queue Length 50th (m)	11.6	26.2	83.0	0.8	18.9
Queue Length 95th (m)	23.9	45.2	115.5	m3.0	24.3
Internal Link Dist (m)	164.7		567.7		254.9
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	741	664	3959	84	3966
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.16	0.57	0.25	0.32

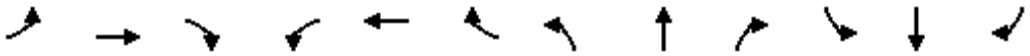
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	104	2234	23	21	1275
Future Volume (vph)	47	104	2234	23	21	1275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1789	1601	5134		1789	5142
Flt Permitted	0.95	1.00	1.00		0.06	1.00
Satd. Flow (perm)	1789	1601	5134		108	5142
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	104	2234	23	21	1275
RTOR Reduction (vph)	0	2	0	0	0	0
Lane Group Flow (vph)	47	102	2257	0	21	1275
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	3		2			6
Permitted Phases		3			6	
Actuated Green, G (s)	20.0	20.0	108.0		108.0	108.0
Effective Green, g (s)	20.0	20.0	108.0		108.0	108.0
Actuated g/C Ratio	0.14	0.14	0.77		0.77	0.77
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	255	228	3960		83	3966
v/s Ratio Prot	0.03		c0.44			0.25
v/s Ratio Perm		c0.06			0.19	
v/c Ratio	0.18	0.45	0.57		0.25	0.32
Uniform Delay, d1	52.8	55.0	6.5		4.5	4.9
Progression Factor	1.00	1.00	1.58		0.80	0.51
Incremental Delay, d2	0.4	1.4	0.4		6.8	0.2
Delay (s)	53.2	56.4	10.7		10.5	2.7
Level of Service	D	E	B		B	A
Approach Delay (s)	55.4		10.7			2.8
Approach LOS	E		B			A

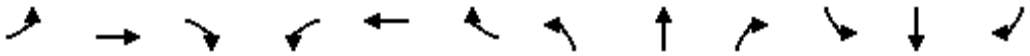
Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	0	115	69	0	5	36	41	20	4	47	51
Future Volume (vph)	67	0	115	69	0	5	36	41	20	4	47	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.915			0.991			0.972			0.932	
Flt Protected		0.982			0.955			0.982			0.998	
Satd. Flow (prot)	0	1692	0	0	1782	0	0	1798	0	0	1752	0
Flt Permitted		0.982			0.955			0.982			0.998	
Satd. Flow (perm)	0	1692	0	0	1782	0	0	1798	0	0	1752	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		188.7			386.0			593.2			282.3	
Travel Time (s)		14.2			29.0			44.5			21.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	67	0	115	69	0	5	36	41	20	4	47	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	182	0	0	74	0	0	97	0	0	102	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
Sign Control		Stop			Stop			Stop			Stop	

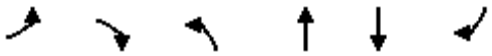
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	67	0	115	69	0	5	36	41	20	4	47	51
Future Volume (vph)	67	0	115	69	0	5	36	41	20	4	47	51
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	67	0	115	69	0	5	36	41	20	4	47	51

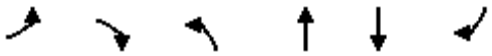
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	182	74	97	102
Volume Left (vph)	67	69	36	4
Volume Right (vph)	115	5	20	51
Hadj (s)	-0.27	0.18	-0.02	-0.26
Departure Headway (s)	4.2	4.7	4.6	4.3
Degree Utilization, x	0.21	0.10	0.12	0.12
Capacity (veh/h)	821	711	735	770
Control Delay (s)	8.3	8.3	8.2	8.0
Approach Delay (s)	8.3	8.3	8.2	8.0
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.2			
Level of Service	A			
Intersection Capacity Utilization	28.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	72	44	130	105	7
Future Volume (vph)	41	72	44	130	105	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
Frt	0.914				0.992	
Flt Protected	0.982			0.988		
Satd. Flow (prot)	1690	0	0	1861	1868	0
Flt Permitted	0.982			0.988		
Satd. Flow (perm)	1690	0	0	1861	1868	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	386.0			594.4	316.9	
Travel Time (s)	29.0			44.6	23.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	41	72	44	130	105	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	0	174	112	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)	24	14	24			14
Sign Control	Stop			Free	Free	

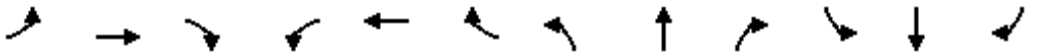
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	72	44	130	105	7
Future Volume (Veh/h)	41	72	44	130	105	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	72	44	130	105	7
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	326	108	112			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326	108	112			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	92	97			
cM capacity (veh/h)	648	945	1478			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	113	174	112
Volume Left	41	44	0
Volume Right	72	0	7
cSH	810	1478	1700
Volume to Capacity	0.14	0.03	0.07
Queue Length 95th (m)	3.7	0.7	0.0
Control Delay (s)	10.2	2.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.2	2.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		



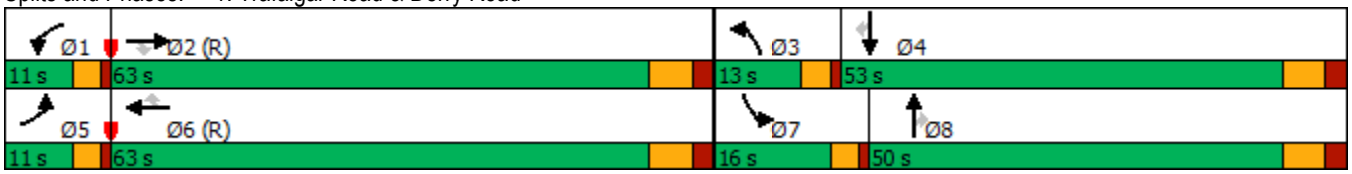
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
Future Volume (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			225			123			93			93
Link Speed (k/h)		80			80			60			60	
Link Distance (m)		455.0			198.7			323.1			623.5	
Travel Time (s)		20.5			8.9			19.4			37.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	

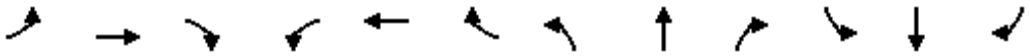
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	10.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	37.9	37.9	11.0	37.9	37.9	11.0	36.8	36.8	11.0	36.8	36.8
Total Split (s)	11.0	63.0	63.0	11.0	63.0	63.0	13.0	50.0	50.0	16.0	53.0	53.0
Total Split (%)	7.9%	45.0%	45.0%	7.9%	45.0%	45.0%	9.3%	35.7%	35.7%	11.4%	37.9%	37.9%
Maximum Green (s)	7.0	56.1	56.1	7.0	56.1	56.1	9.0	43.2	43.2	12.0	46.2	46.2
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6	4.6	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	1.0	2.3	2.3	1.0	2.3	2.3	1.0	2.6	2.6	1.0	2.6	2.6
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		24.0	24.0		24.0	24.0		23.0	23.0		23.0	23.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	8.0	60.3	60.3	8.0	58.1	58.1	10.0	45.2	45.2	13.0	48.2	48.2
Actuated g/C Ratio	0.06	0.43	0.43	0.06	0.42	0.42	0.07	0.32	0.32	0.09	0.34	0.34
v/c Ratio	0.50	0.67	0.43	0.18	0.91	0.27	0.96	0.71	0.03	0.84	0.93	0.08
Control Delay	90.7	20.6	4.7	61.9	57.5	23.8	104.1	63.0	1.2	84.6	56.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.7	20.6	4.7	61.9	57.5	23.8	104.1	63.0	1.2	84.6	56.0	0.7
LOS	F	C	A	E	E	C	F	E	A	F	E	A
Approach Delay		21.4			54.2			69.9			58.8	
Approach LOS		C			D			E			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 49.9		Intersection LOS: D	
Intersection Capacity Utilization 89.8%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 1: Trafalgar Road & Derry Road

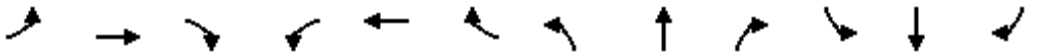




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
v/c Ratio	0.50	0.67	0.43	0.18	0.91	0.27	0.96	0.71	0.03	0.84	0.93	0.08
Control Delay	90.7	20.6	4.7	61.9	57.5	23.8	104.1	63.0	1.2	84.6	56.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.7	20.6	4.7	61.9	57.5	23.8	104.1	63.0	1.2	84.6	56.0	0.7
Queue Length 50th (m)	15.4	49.7	7.6	5.3	170.9	21.7	35.3	127.3	0.0	39.4	164.8	0.0
Queue Length 95th (m)	m21.4	76.2	20.9	m9.0	191.2	40.4	#62.4	143.2	m1.2	#62.0	#198.4	1.3
Internal Link Dist (m)		431.0			174.7			299.1			599.5	
Turn Bay Length (m)	130.0		110.0	130.0		70.0	110.0		70.0	130.0		85.0
Base Capacity (vph)	202	1985	831	202	1913	749	252	1488	590	328	1587	623
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.67	0.43	0.18	0.91	0.27	0.96	0.71	0.03	0.84	0.93	0.08

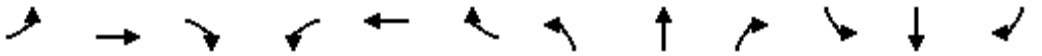
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
Future Volume (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.9	4.9	3.0	4.9	4.9	3.0	4.8	4.8	3.0	4.8	4.8
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	102	1328	360	36	1744	199	242	1050	16	276	1482	51
RTOR Reduction (vph)	0	0	129	0	0	72	0	0	11	0	0	33
Lane Group Flow (vph)	102	1328	231	36	1744	127	242	1050	5	276	1482	18
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	7.0	57.5	57.5	5.6	56.1	56.1	9.0	43.2	43.2	12.0	46.2	46.2
Effective Green, g (s)	8.0	59.5	59.5	6.6	58.1	58.1	10.0	45.2	45.2	13.0	48.2	48.2
Actuated g/C Ratio	0.06	0.42	0.42	0.05	0.42	0.42	0.07	0.32	0.32	0.09	0.34	0.34
Clearance Time (s)	4.0	6.9	6.9	4.0	6.9	6.9	4.0	6.8	6.8	4.0	6.8	6.8
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	202	1959	694	166	1913	677	252	1488	527	328	1587	562
v/s Ratio Prot	c0.03	0.29		0.01	c0.38		c0.07	0.23		0.08	c0.32	
v/s Ratio Perm			0.14			0.08			0.00			0.01
v/c Ratio	0.50	0.68	0.33	0.22	0.91	0.19	0.96	0.71	0.01	0.84	0.93	0.03
Uniform Delay, d1	64.1	32.5	26.9	64.2	38.5	26.0	64.8	41.6	32.2	62.5	44.4	30.4
Progression Factor	1.31	0.59	0.34	0.95	1.31	2.22	0.90	1.44	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	1.3	0.9	1.2	6.9	0.5	44.7	1.8	0.0	19.0	10.9	0.0
Delay (s)	86.9	20.6	10.2	62.5	57.3	58.2	103.2	61.8	32.2	81.5	55.3	30.5
Level of Service	F	C	B	E	E	E	F	E	C	F	E	C
Approach Delay (s)		22.3			57.5			69.1			58.6	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	50.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.7
Intersection Capacity Utilization	89.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



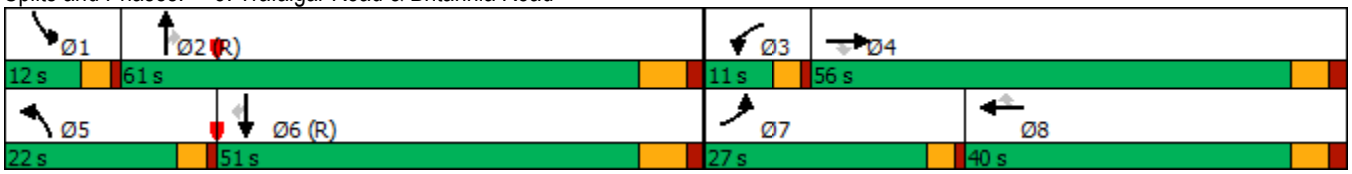
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
Future Volume (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (m)	50.0			50.0			50.0			50.0		
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242			156			133			312
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		503.1			219.2			264.1			430.6	
Travel Time (s)		30.2			13.2			15.8			25.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
Shared Lane Traffic (%)												
Lane Group Flow (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
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)		7.4			7.4			7.4			7.4	
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	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	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	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	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	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	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	

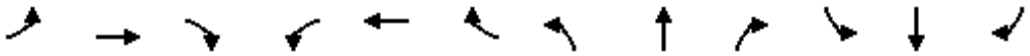
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	15.0	15.0	7.0	15.0	15.0	7.0	25.0	25.0	7.0	25.0	25.0
Minimum Split (s)	11.0	40.0	40.0	11.0	40.0	40.0	11.0	41.0	41.0	11.0	41.0	41.0
Total Split (s)	27.0	56.0	56.0	11.0	40.0	40.0	22.0	61.0	61.0	12.0	51.0	51.0
Total Split (%)	19.3%	40.0%	40.0%	7.9%	28.6%	28.6%	15.7%	43.6%	43.6%	8.6%	36.4%	36.4%
Maximum Green (s)	23.0	50.0	50.0	7.0	34.0	34.0	18.0	54.0	54.0	8.0	44.0	44.0
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0	-1.0	-2.0	-2.0
Total Lost Time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		27.0	27.0		27.0	27.0		27.0	27.0		27.0	27.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	24.0	52.0	52.0	8.0	36.0	36.0	19.0	56.0	56.0	9.0	46.0	46.0
Actuated g/C Ratio	0.17	0.37	0.37	0.06	0.26	0.26	0.14	0.40	0.40	0.06	0.33	0.33
v/c Ratio	1.15	0.67	0.79	0.63	0.93	0.26	1.14	0.92	0.29	0.92	1.04	0.64
Control Delay	134.8	39.1	31.5	95.7	51.1	5.3	144.9	31.9	6.0	109.8	82.4	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.8	39.1	31.5	95.7	51.1	5.3	144.9	31.9	6.0	109.8	82.4	24.2
LOS	F	D	C	F	D	A	F	C	A	F	F	C
Approach Delay		64.5			50.5			54.8			72.6	
Approach LOS		E			D			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 90 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 61.6		Intersection LOS: E	
Intersection Capacity Utilization 101.2%		ICU Level of Service G	
Analysis Period (min) 15			

* User Entered Value

Splits and Phases: 3: Trafalgar Road & Britannia Road



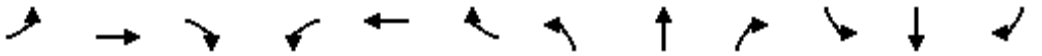


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
v/c Ratio	1.15	0.67	0.79	0.63	0.93	0.26	1.14	0.92	0.29	0.92	1.04	0.64
Control Delay	134.8	39.1	31.5	95.7	51.1	5.3	144.9	31.9	6.0	109.8	82.4	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.8	39.1	31.5	95.7	51.1	5.3	144.9	31.9	6.0	109.8	82.4	24.2
Queue Length 50th (m)	~116.2	109.2	93.0	15.4	127.2	15.8	~90.2	141.5	1.6	30.2	~189.6	50.0
Queue Length 95th (m)	#154.1	127.8	144.5	30.3	#157.2	9.8	#124.9	190.7	12.8	#53.5	#234.0	113.5
Internal Link Dist (m)		479.1			195.2			240.1			406.6	
Turn Bay Length (m)	125.0		85.0	90.0		70.0	165.0		70.0	140.0		140.0
Base Capacity (vph)	607	1712	758	202	1185	535	480	1844	733	227	1515	746
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.15	0.67	0.79	0.63	0.93	0.26	1.14	0.92	0.29	0.92	1.04	0.64

Intersection Summary

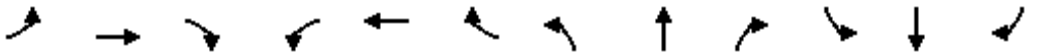
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
Future Volume (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	4.0	4.0	3.0	4.0	4.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Util. Factor	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00	0.97	*0.80	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3541	4611	1633	3541	4611	1633	3541	4611	1633	3541	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	696	1140	600	127	1101	141	545	1688	213	208	1571	480
RTOR Reduction (vph)	0	0	152	0	0	105	0	0	80	0	0	209
Lane Group Flow (vph)	696	1140	448	127	1101	36	545	1688	133	208	1571	271
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	23.0	50.0	50.0	7.0	34.0	34.0	18.0	54.0	54.0	8.0	44.0	44.0
Effective Green, g (s)	24.0	52.0	52.0	8.0	36.0	36.0	19.0	56.0	56.0	9.0	46.0	46.0
Actuated g/C Ratio	0.17	0.37	0.37	0.06	0.26	0.26	0.14	0.40	0.40	0.06	0.33	0.33
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	6.0	4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	607	1712	606	202	1185	419	480	1844	653	227	1515	536
v/s Ratio Prot	c0.20	0.25		0.04	c0.24		c0.15	0.37		0.06	c0.34	
v/s Ratio Perm			0.27			0.02			0.08			0.17
v/c Ratio	1.15	0.67	0.74	0.63	0.93	0.09	1.14	0.92	0.20	0.92	1.04	0.50
Uniform Delay, d1	58.0	36.7	38.1	64.5	50.8	39.5	60.5	39.8	27.4	65.1	47.0	37.8
Progression Factor	1.00	1.00	1.00	1.28	0.75	0.95	1.23	0.60	0.48	1.16	1.14	1.56
Incremental Delay, d2	84.2	1.3	5.7	5.3	11.8	0.2	81.6	7.7	0.6	32.2	31.0	2.7
Delay (s)	142.2	38.1	43.8	88.2	49.9	37.6	156.0	31.4	13.8	107.8	84.6	61.6
Level of Service	F	D	D	F	D	D	F	C	B	F	F	E
Approach Delay (s)		69.2			52.2			57.6			81.9	
Approach LOS		E			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	66.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



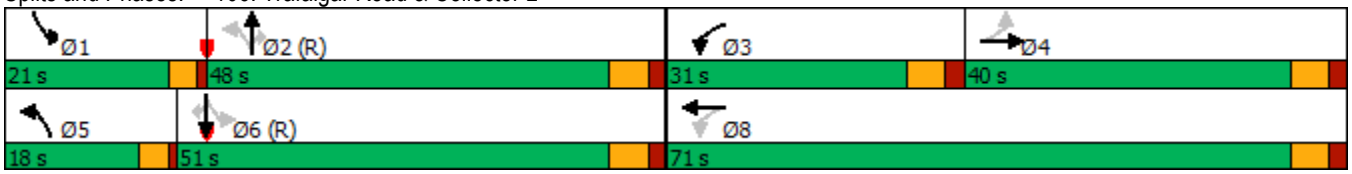
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	21	29	323	19	86	46	1624	378	261	1953	49
Future Volume (vph)	27	21	29	323	19	86	46	1624	378	261	1953	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	50.0		0.0	130.0		0.0	50.0		50.0	100.0		50.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	15.0			15.0			50.0			50.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*0.80	1.00	1.00	*0.80	1.00
Frt		0.913			0.877				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1825	1754	0	1825	1685	0	1825	4611	1633	1825	4611	1633
Flt Permitted	0.689			0.423			0.064			0.060		
Satd. Flow (perm)	1324	1754	0	813	1685	0	123	4611	1633	115	4611	1633
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			86				155			101
Link Speed (k/h)		48			48			60			60	
Link Distance (m)		441.2			184.6			368.2			591.7	
Travel Time (s)		33.1			13.8			22.1			35.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	27	21	29	323	19	86	46	1624	378	261	1953	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	50	0	323	105	0	46	1624	378	261	1953	49
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	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0		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	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		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	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		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	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		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0		5.0	10.0		7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	40.0	40.0		11.0	40.0		11.0	26.0	26.0	13.0	26.0	26.0
Total Split (s)	40.0	40.0		31.0	71.0		18.0	48.0	48.0	21.0	51.0	51.0
Total Split (%)	28.6%	28.6%		22.1%	50.7%		12.9%	34.3%	34.3%	15.0%	36.4%	36.4%
Maximum Green (s)	34.0	34.0		25.0	65.0		14.0	42.0	42.0	17.0	45.0	45.0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		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		4.0	6.0	6.0	4.0	6.0	6.0
Lead/Lag	Lag	Lag		Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	7.0	7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)	27.0	27.0			27.0			9.0	9.0		9.0	9.0
Pedestrian Calls (#/hr)	0	0			0			0	0		0	0
Act Effct Green (s)	10.4	10.4		37.3	37.3		73.3	64.0	64.0	92.7	81.6	81.6
Actuated g/C Ratio	0.07	0.07		0.27	0.27		0.52	0.46	0.46	0.66	0.58	0.58
v/c Ratio	0.28	0.32		0.83	0.21		0.30	0.77	0.45	0.74	0.73	0.05
Control Delay	68.6	37.2		63.3	11.2		15.6	25.8	15.2	48.4	25.2	0.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	37.2		63.3	11.2		15.6	25.8	15.2	48.4	25.2	0.1
LOS	E	D		E	B		B	C	B	D	C	A
Approach Delay		48.2			50.5			23.6			27.3	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

* User Entered Value

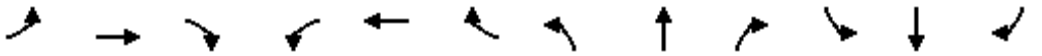
Splits and Phases: 106: Trafalgar Road & Collector L



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	27	50	323	105	46	1624	378	261	1953	49
v/c Ratio	0.28	0.32	0.83	0.21	0.30	0.77	0.45	0.74	0.73	0.05
Control Delay	68.6	37.2	63.3	11.2	15.6	25.8	15.2	48.4	25.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.6	37.2	63.3	11.2	15.6	25.8	15.2	48.4	25.2	0.1
Queue Length 50th (m)	7.2	5.6	77.0	3.8	2.8	127.3	50.5	52.6	172.9	0.0
Queue Length 95th (m)	17.1	18.5	107.0	17.2	m7.2	#165.4	59.6	81.3	205.2	0.0
Internal Link Dist (m)		417.2		160.6		344.2			567.7	
Turn Bay Length (m)	50.0		130.0		50.0		50.0	100.0		50.0
Base Capacity (vph)	321	447	401	828	240	2108	831	355	2688	994
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.11	0.81	0.13	0.19	0.77	0.45	0.74	0.73	0.05

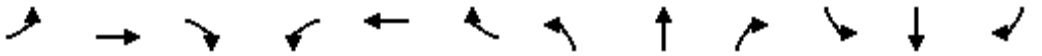
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



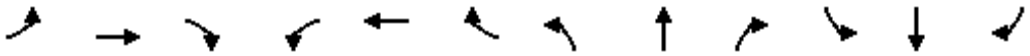
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	21	29	323	19	86	46	1624	378	261	1953	49
Future Volume (vph)	27	21	29	323	19	86	46	1624	378	261	1953	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	*0.80	1.00	1.00	*0.80	1.00
Frt	1.00	0.91		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1825	1754		1825	1685		1825	4611	1633	1825	4611	1633
Flt Permitted	0.69	1.00		0.42	1.00		0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	1324	1754		812	1685		122	4611	1633	115	4611	1633
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	27	21	29	323	19	86	46	1624	378	261	1953	49
RTOR Reduction (vph)	0	27	0	0	62	0	0	0	85	0	0	21
Lane Group Flow (vph)	27	23	0	323	43	0	46	1624	293	261	1953	28
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	8.4	8.4		38.5	38.5		68.7	62.8	62.8	89.5	79.6	79.6
Effective Green, g (s)	8.4	8.4		38.5	38.5		68.7	62.8	62.8	89.5	79.6	79.6
Actuated g/C Ratio	0.06	0.06		0.28	0.28		0.49	0.45	0.45	0.64	0.57	0.57
Clearance Time (s)	6.0	6.0		6.0	6.0		4.0	6.0	6.0	4.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	79	105		397	463		131	2068	732	350	2621	928
v/s Ratio Prot		0.01		c0.14	0.03		0.01	c0.35		c0.12	0.42	
v/s Ratio Perm	0.02			c0.08			0.16		0.18	0.35		0.02
v/c Ratio	0.34	0.22		0.81	0.09		0.35	0.79	0.40	0.75	0.75	0.03
Uniform Delay, d1	63.1	62.7		44.9	37.8		21.9	32.9	25.9	40.8	22.6	13.3
Progression Factor	1.00	1.00		1.00	1.00		0.78	0.68	0.82	1.00	1.00	1.00
Incremental Delay, d2	2.6	1.0		12.0	0.1		1.3	2.5	1.3	8.4	2.0	0.1
Delay (s)	65.7	63.7		56.9	37.8		18.3	24.9	22.7	49.2	24.6	13.3
Level of Service	E	E		E	D		B	C	C	D	C	B
Approach Delay (s)		64.4			52.2			24.4			27.2	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	338	74	60	201	102	54	31	45	104	87	173
Future Volume (vph)	249	338	74	60	201	102	54	31	45	104	87	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	25.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	10.0			25.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.950			0.953			0.936	
Flt Protected	0.950			0.950				0.980			0.986	
Satd. Flow (prot)	1560	1818	0	1772	1813	0	0	1763	0	0	1640	0
Flt Permitted	0.950			0.950				0.980			0.986	
Satd. Flow (perm)	1560	1818	0	1772	1813	0	0	1763	0	0	1640	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		184.6			422.4			376.5			593.2	
Travel Time (s)		13.8			31.7			28.2			44.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	17%	3%	2%	3%	1%	0%	2%	4%	0%	1%	3%	15%
Adj. Flow (vph)	249	338	74	60	201	102	54	31	45	104	87	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	249	412	0	60	303	0	0	130	0	0	364	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			0.0			0.0	
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
Sign Control		Stop			Stop			Stop			Stop	

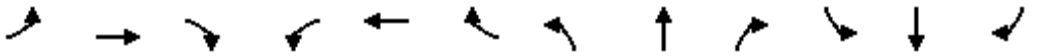
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	249	338	74	60	201	102	54	31	45	104	87	173
Future Volume (vph)	249	338	74	60	201	102	54	31	45	104	87	173
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	249	338	74	60	201	102	54	31	45	104	87	173

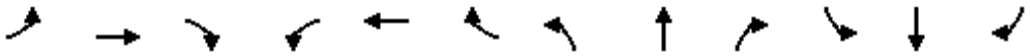
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total (vph)	249	412	60	303	130	364
Volume Left (vph)	249	0	60	0	54	104
Volume Right (vph)	0	74	0	102	45	173
Hadj (s)	0.79	-0.08	0.55	-0.22	-0.09	-0.09
Departure Headway (s)	8.0	7.1	8.2	7.4	7.8	6.9
Degree Utilization, x	0.55	0.81	0.14	0.62	0.28	0.70
Capacity (veh/h)	440	497	418	460	410	498
Control Delay (s)	19.2	32.8	11.3	20.6	13.8	24.5
Approach Delay (s)	27.7		19.1		13.8	24.5
Approach LOS	D		C		B	C

Intersection Summary				
Delay	23.7			
Level of Service	C			
Intersection Capacity Utilization	64.7%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	347	8	32	303	46	8	32	17	32	48	63
Future Volume (vph)	98	347	8	32	303	46	8	32	17	32	48	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	25.0		0.0	25.0		0.0	25.0		0.0	25.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.980			0.948			0.915	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1789	1861	0	1825	1862	0	1825	1786	0	1825	1743	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1789	1861	0	1825	1862	0	1825	1786	0	1825	1743	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		422.4			514.0			400.7			594.4	
Travel Time (s)		31.7			38.6			30.1			44.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	0%	0%	1%	2%	0%	2%	2%	0%	2%	0%
Adj. Flow (vph)	98	347	8	32	303	46	8	32	17	32	48	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	355	0	32	349	0	8	49	0	32	111	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
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	347	8	32	303	46	8	32	17	32	48	63
Future Volume (Veh/h)	98	347	8	32	303	46	8	32	17	32	48	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	98	347	8	32	303	46	8	32	17	32	48	63
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	349			355			1001	960	351	966	941	326
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	349			355			1001	960	351	966	941	326
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			97			95	86	98	83	80	91
cM capacity (veh/h)	1210			1215			159	230	692	189	236	720

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	98	355	32	349	8	49	32	111
Volume Left	98	0	32	0	8	0	32	0
Volume Right	0	8	0	46	0	17	0	63
cSH	1210	1700	1215	1700	159	299	189	381
Volume to Capacity	0.08	0.21	0.03	0.21	0.05	0.16	0.17	0.29
Queue Length 95th (m)	2.0	0.0	0.6	0.0	1.2	4.4	4.5	9.1
Control Delay (s)	8.2	0.0	8.0	0.0	28.9	19.4	27.8	18.3
Lane LOS	A		A		D	C	D	C
Approach Delay (s)	1.8		0.7		20.7		20.4	
Approach LOS					C		C	

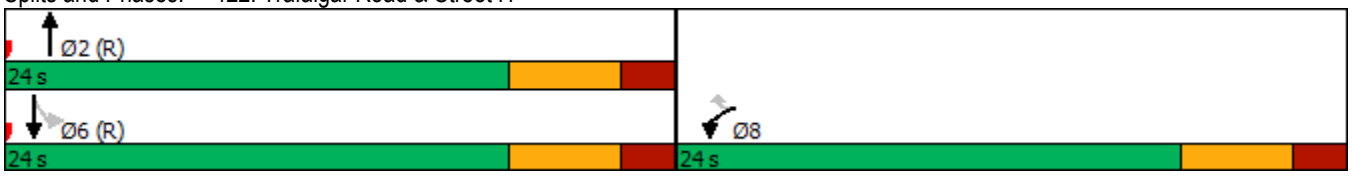
Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	42.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	42	1672	56	41	2259
Future Volume (vph)	25	42	1672	56	41	2259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (m)	90.0	0.0		50.0	50.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	2.5				2.5	
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	0.91
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1789	1601	5116	0	1789	5142
Flt Permitted	0.950				0.222	
Satd. Flow (perm)	1789	1601	5116	0	418	5142
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		2	12			
Link Speed (k/h)	48		48			48
Link Distance (m)	188.7		591.7			278.9
Travel Time (s)	14.2		44.4			20.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	42	1672	56	41	2259
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	42	1728	0	41	2259
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
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)	97	97		97	97	
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Minimum Split (s)	24.0	24.0	24.0		24.0	24.0
Total Split (s)	24.0	24.0	24.0		24.0	24.0
Total Split (%)	50.0%	50.0%	50.0%		50.0%	50.0%
Maximum Green (s)	18.0	18.0	18.0		18.0	18.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	18.0	18.0	18.0		18.0	18.0
Actuated g/C Ratio	0.38	0.38	0.38		0.38	0.38
v/c Ratio	0.04	0.07	0.90		0.26	1.17

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Control Delay	9.8	9.8	22.5		15.8	102.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	9.8	9.8	22.5		15.8	102.1
LOS	A	A	C		B	F
Approach Delay	9.8		22.5			100.6
Approach LOS	A		C			F

Intersection Summary			
Area Type:	Other		
Cycle Length: 48			
Actuated Cycle Length: 48			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 66.2		Intersection LOS: E	
Intersection Capacity Utilization 57.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 422: Trafalgar Road & Street H



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	25	42	1728	41	2259
v/c Ratio	0.04	0.07	0.90	0.26	1.17
Control Delay	9.8	9.8	22.5	15.8	102.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	9.8	22.5	15.8	102.1
Queue Length 50th (m)	1.3	2.1	48.0	2.3	~88.2
Queue Length 95th (m)	4.6	6.5	#76.8	8.4	#114.3
Internal Link Dist (m)	164.7		567.7		254.9
Turn Bay Length (m)	90.0			50.0	
Base Capacity (vph)	670	601	1926	156	1928
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.07	0.90	0.26	1.17

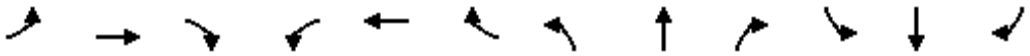
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

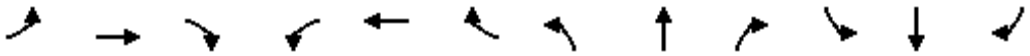
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	42	1672	56	41	2259
Future Volume (vph)	25	42	1672	56	41	2259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1789	1601	5117		1789	5142
Flt Permitted	0.95	1.00	1.00		0.22	1.00
Satd. Flow (perm)	1789	1601	5117		419	5142
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	42	1672	56	41	2259
RTOR Reduction (vph)	0	1	8	0	0	0
Lane Group Flow (vph)	25	41	1721	0	41	2259
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	18.0	18.0	18.0		18.0	18.0
Effective Green, g (s)	18.0	18.0	18.0		18.0	18.0
Actuated g/C Ratio	0.38	0.38	0.38		0.38	0.38
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Lane Grp Cap (vph)	670	600	1918		157	1928
v/s Ratio Prot	0.01		0.34			c0.44
v/s Ratio Perm		c0.03			0.10	
v/c Ratio	0.04	0.07	0.90		0.26	1.17
Uniform Delay, d1	9.5	9.6	14.1		10.4	15.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.2	7.1		4.0	83.2
Delay (s)	9.6	9.8	21.2		14.4	98.2
Level of Service	A	A	C		B	F
Approach Delay (s)	9.8		21.2			96.7
Approach LOS	A		C			F

Intersection Summary			
HCM 2000 Control Delay	63.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	0	74	53	0	3	81	23	64	14	85	72
Future Volume (vph)	24	0	74	53	0	3	81	23	64	14	85	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.898			0.993			0.949			0.943	
Flt Protected		0.988			0.955			0.976			0.996	
Satd. Flow (prot)	0	1671	0	0	1786	0	0	1744	0	0	1769	0
Flt Permitted		0.988			0.955			0.976			0.996	
Satd. Flow (perm)	0	1671	0	0	1786	0	0	1744	0	0	1769	0
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		188.7			386.0			593.2			282.3	
Travel Time (s)		14.2			29.0			44.5			21.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	24	0	74	53	0	3	81	23	64	14	85	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	0	0	56	0	0	168	0	0	171	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)	97		97	97		97	97		97	97		97
Sign Control		Stop			Stop			Stop			Stop	

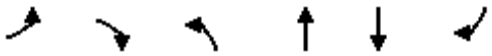
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	24	0	74	53	0	3	81	23	64	14	85	72
Future Volume (vph)	24	0	74	53	0	3	81	23	64	14	85	72
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	24	0	74	53	0	3	81	23	64	14	85	72

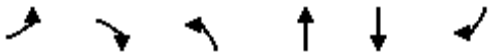
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	98	56	168	171
Volume Left (vph)	24	53	81	14
Volume Right (vph)	74	3	64	72
Hadj (s)	-0.37	0.19	-0.10	-0.20
Departure Headway (s)	4.4	5.0	4.4	4.3
Degree Utilization, x	0.12	0.08	0.20	0.20
Capacity (veh/h)	756	665	788	802
Control Delay (s)	7.9	8.4	8.5	8.3
Approach Delay (s)	7.9	8.4	8.5	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.3			
Level of Service	A			
Intersection Capacity Utilization	38.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	30	60	91	92	25
Future Volume (vph)	21	30	60	91	92	25
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	0.921				0.971	
Flt Protected	0.980			0.981		
Satd. Flow (prot)	1700	0	0	1848	1829	0
Flt Permitted	0.980			0.981		
Satd. Flow (perm)	1700	0	0	1848	1829	0
Link Speed (k/h)	48			48	48	
Link Distance (m)	386.0			594.4	316.9	
Travel Time (s)	29.0			44.6	23.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	30	60	91	92	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	0	0	151	117	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)	97	97	97			97
Sign Control	Stop			Stop	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	21	30	60	91	92	25
Future Volume (vph)	21	30	60	91	92	25
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	21	30	60	91	92	25

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	51	151	117
Volume Left (vph)	21	60	0
Volume Right (vph)	30	0	25
Hadj (s)	-0.24	0.11	-0.09
Departure Headway (s)	4.2	4.2	4.1
Degree Utilization, x	0.06	0.18	0.13
Capacity (veh/h)	796	827	865
Control Delay (s)	7.5	8.2	7.7
Approach Delay (s)	7.5	8.2	7.7
Approach LOS	A	A	A

Intersection Summary			
Delay	7.9		
Level of Service	A		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix K
On-street Parking Plan

Gas Pipeline Corridor

Existing Agricultural

TRAFALGAR ROAD

Future Park

Future Secondary School

Existing Agricultural

Future Development

STREET "A" (LOUIS ST LAURENT AVE) 26m

STREET "B"

STREET "C"

STREET "D"

STREET "E"

STREET "F"

STREET "G"

STREET "H"

STREET "I"

STREET "J"

STREET "K"

STREET "L"

STREET "M"

STREET "N"

STREET "O"

LANE "A"

LANE "B"

Note:
On-street parallel parking locations are shown with the following parking prohibition rule as per Town of Milton Engineering and Parks Standards Manual & Town of Milton's Parking Regulation:

- Parking Prohibition Distances:
  - 15.0m parking prohibitions at local-to-local & local-to-collector intersecting roads
  - 50.0m parking prohibitions at collector-to-collector & collector-to-arterial intersecting roads

Legend:

On-Street Parallel Parking Locations

TYLin
3381 STEELES AVE E,
Suite 315
Toronto, ON
M2H 3S8
P: 905.738.5700

YORK TRAFALGAR CORP. - HANNOVER DRAFT PLAN (MP4 LANDS) - TRAFFIC IMPACT STUDY

CONCEPTUAL ON-STREET PARKING LOCATION PLAN

N.T.S

DRAWING No. 01

DATE JUL 2025

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