

TRANSPORTATION IMPACT STUDY

**THE BEAVERBROOK
COMMUNITY – 323
OXFORD STREET WEST,
92 PROUDFOOT LANE, 825
PROUDFOOT LANE,
LONDON, ON**

VERSION 1 • JULY 2021

REPORT PREPARED FOR

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REPORT PREPARED BY



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EXECUTIVE SUMMARY

The Municipal Infrastructure Group Ltd. (TMIG) was retained by Sam Katz Holdings Limited to prepare a Transportation Impact Study in support of a Draft Plan of Subdivision for a proposed residential subdivision to be located on 3 parcels of land; 323 Oxford Street West, 92 Proudfoot Lane & 825 Proudfoot Lane, owned by Sam Katz Holdings Limited and situated north of Oxford Street West, generally opposite Beaverbrook Avenue in the City of London. The proposed development will contain a mix of residential densities with 2,850 residential units, 4.56 hectares of parks and 6.41 hectares of open space blocks around the Mud Creek channel. The site is currently a predominantly greenfield area.

In consideration of the possibility for bonus density of 25% on certain blocks, if fully applied for and permitted, this study analyzes the maximum total unit count of 3,462 residential units, including possible bonus zoning, for a conservative assessment of future traffic conditions.

This report determines the site related traffic and the subsequent traffic-related impacts on the adjacent road network during the weekday a.m. and p.m. peak hours from the proposed development. These impacts are based on projected future background traffic and road network conditions derived for 2021 baseline conditions, 2026 (Phase 1), and 2035 (full build-out), planning horizon years. Traffic generated by other developments in the study area, as identified by the City through pre-consultation, is used to forecast future background and total future traffic volumes for the study area.

Based on the proposed subdivision plan, vehicular access to the area will be provided by the proposed northward extension of Beaverbrook Avenue from Oxford Street West to Proudfoot Lane, a westerly extension of Westfield Drive to Beaverbrook Avenue. The proposed “Street A”, “Street B”, “Condo Road” and “Private Laneways” will act as public and private local roads through the site, connecting residential blocks to the collector road. A pedestrian walkway will connect residents from Beaverbrook Avenue to Walmer Gardens, north of the Canadian Pacific Railway Line.

Based on pre-consultation with the City of London, a 1.0% annual growth rate was agreed to and applied to Oxford Street West, Beaverbrook Avenue, Proudfoot Lane, and Wonderland Road North to 2030, and 0.5% from 2030-2035. In addition, a 0.5% annual growth rate was agreed upon and applied to Cherryhill Boulevard and Platt’s Lane to 2035.

Site trips were generated based on the maximum total count of 3,462 units, including the possible 25% bonus zoning. In 2026, the proposed draft plan is expected to generate a total of 175 two-way vehicle trips during the a.m. peak hour, consisting of 45 inbound trips and 130 outbound trips, and 214 two-way vehicle trips during the p.m. peak hour consisting of 131 inbound trips and 83 outbound trips. In 2035, the full build-out of the draft plan is expected to generate a total of 718 two-way vehicle trips during the a.m. peak hour, consisting of 176 inbound trips and 542 outbound trips, and 843 two-way vehicle trips during the p.m. peak hour consisting of 514 inbound trips and 329 outbound trips.

Signal warrant and all-way stop control (AWSC) analyses were conducted for several intersections. It is recommended that the intersection of Beaverbrook Avenue and Oxford Avenue West be signalized by 2026 in response to background corridor growth, in order to maintain acceptable levels of service prior to the addition of trips from the proposed development. Beaverbrook Avenue and Proudfoot Lane satisfied AWSC warrant under future total 2026 conditions therefore were presumed installed in the future total 2035 conditions. None of the proposed *internal* intersections satisfied the AWSC warrant.

Under baseline 2021, and future 2026, and 2035 traffic conditions, the study area intersections are expected to operate with predominantly acceptable operational characteristics and sufficient reserve capacity during both weekday a.m. and p.m. peak hours with no significant unmitigable volume to capacity issues brought about by the proposed development to report.

This study concludes that the traffic generated by the proposed subdivision can be accommodated by the boundary road network, factoring in background corridor growth, proximate developments, and the development of the interior local road network. It is recommended that signal coordination be applied, to improve levels of service and better manage corridor delays. It is also recommended that the City continue to monitor the intersection of Oxford Street West and Beaverbrook Avenue to gauge the optimal time to implement a traffic signal to accommodate corridor growth. Pedestrian and cyclist improvements to minimize first/last-mile gaps in the city’s active mobility network around the subject lands are also recommended.

A comprehensive Transportation Demand Management (TDM) approach that proposes a suite of measures to meet the objectives of the City of London’s targets (to reduce automobile dependency and vehicular demand, and encourage/promote passenger, transit, cycling, walking, rideshare, and examine future services) has been completed and is contained in this report. An Active Transportation Plan supplements the pedestrian and cycling discussion within the TDM chapter.

Finally, TMIG completed a design and circulation review of the proposed Draft Plan of Subdivision, which showed no projected conflict for the subject lands.

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1 INTRODUCTION

1.1 Study Background and Purpose

TMIG was retained by Sam Katz Holdings Limited to prepare a Transportation Impact Study, inclusive of a Transportation Demand Management (TDM) plan and an Active Transportation Plan for a proposed residential subdivision development, located at 323 Oxford Street West, and inclusive of 92 & 825 Proudfoot Lane, in the City of London. The study investigates and presents the following:

- Establish baseline traffic conditions for the study area, prepare forecasts for future background traffic growth, and assess the operating conditions for the study area road network for 2021 (existing), and 2026 (Phase 1), and 2035 (full build-out), future conditions.
- Based on the residential development, apply the estimated traffic generation and distribution of the development to the adjacent road network, and determine the future impacts in the context of all local transportation modes.
- Determine the future site-related impacts in the context of local transportation modes including reviews of cycling and pedestrian facilities and circulation within the site and connection from the proposed development to the external road network.
- Review of the residential subdivision development plan in the context of operational/geometric issues and provide recommendations on how to address any deficiencies (if any are revealed).
- A Transportation Demand Management (TDM) discussion outlines the many opportunities for residents to shift away from single occupant vehicle (non-SOV) travel modes, using the existing / future transit and active transportation facilities offered in the study area.
- An Active Transportation Plan, included within the TDM Plan, illustrates pedestrian and cycling systems throughout the site, including connections to external active transportation linkages and transit facilities.

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 City standards and provides safe operation of vehicles within the proposed subdivision.

A detailed scope was submitted by TMIG to the City of London staff for review comment. Comments were received and have informed the general work program for the enclosed study. The pre-consultation correspondence has been included in **Appendix A**.

1.2 Study Horizon

This study will include three (3) planning horizon years in alignment with the proposed phasing of the draft plan of subdivision. Traffic conditions will be modelled to 2021 baseline conditions, 2025 Phase 1 build-out, and 2035 Full build-out horizon years.

The City of London's TIS Guidelines require a final "five-years post full-build-out" planning horizon, expanding the scope of this study to 2040. Upon further consultation with the City's transportation staff regarding the study's longer than typical horizon, 2035 was accepted as the final horizon year within the scope of this study.

1.3 Study Methodology

The study analysis will focus on existing conditions, modelled on turning moving counts obtained from the City of London and collected by TMIG in November 2019. Due to the current COVID-19 pandemic, traffic growth along the roadway has been reduced since 2020 and new traffic counts were not surveyed as road conditions have been deemed abnormal. The historic data acquired by TMIG is considered acceptable as counts for all intersections were conducted in 2019, with the exceptions of Beaverbrook Avenue and Wonderland Road North, dated October 2017. Appropriate growth rates were applied to the surveyed traffic volumes to derive existing traffic conditions, as confirmed with City staff, and approved during pre-consultation.

It should be noted that 2021 traffic volumes would be in the same order of magnitude as 2019 volumes due to the reduced traffic growth created by the pandemic in 2020. Accordingly, for the purpose of conservative analysis, TMIG assessed existing conditions within this study as 2019 volumes and added traffic growth to the 2026, and 2035 horizon years.

Traffic data was analyzed at the study intersections listed below:

- Oxford Street West and Beaverbrook Avenue (unsignalized)
- Oxford Street West and Cherryhill Boulevard (signalized)
- Oxford Street West and Proudfoot Lane (signalized)
- Beaverbrook Avenue and Proudfoot Lane
- Beaverbrook Avenue and Wonderland Road North (signalized)
- Cherryhill Place and Platt's Lane (unsignalized)
- Oxford Street West and Beaverbrook Avenue (future condition)
- Beaverbrook Avenue and Westfield Drive / Proposed Street A (future condition)
- Beaverbrook Avenue and Proposed Street B (future condition)
- Proposed Street A and Proposed Street B (future condition)
- Proposed Street A and Proposed Street B / Proposed Condo Road (future condition)
- Proposed Street B and Proposed Condo Road (future condition)

Traffic volumes for future conditions will be forecasted using the traffic developed in background developments within the vicinity of the subject lands and from site generated traffic for 2021, 2026, and 2035 study horizons. Estimated traffic volumes for future background conditions will include corridor growth and traffic for any relevant planned developments within the planning horizon.

Study assessment will be based on weekday a.m. and p.m. peak hour analysis, deemed the critical periods for study area assessment. Traffic operations assessment will consider the existing intersections listed above, as well as the proposed primary connection points to the future collector road system for each development block (future condition only).

Based on recommended future study area infrastructure improvements, analysis for future conditions will assess future intersections under stop control and signal control. Study intersection analysis will be conducted using Synchro and SimTraffic software.

2 DEVELOPMENT CHARACTERISTICS

2.1 Study Environment

The proposed residential subdivision development is located within the City of London. The site is currently situated on vacant green field lands situated north of Oxford Street West, generally opposite Beaverbrook Avenue and includes 3 parcels of land: 323 Oxford Street West, 92 Proudfoot Lane & 825 Proudfoot Lane. The site is bounded by the Canadian Pacific Railway Line to the north, existing residential buildings to the east, commercial and industrial lands to the west, and Oxford Street West to the south. The subject site and the surrounding road network are illustrated in **Figure 2-1**.

Figure 2-1 Site Location



2.2 Mud Creek Channelization

A proposal review meeting was held in June 2020 with the City of London in which staff's feedback, noted under the Proposal Review Meeting Summary and Record of Consultation (June 23, 2020), included a comment under Transportation Planning and Design regarding the need for a Municipal Class Environmental Assessment (Class EA) for channel crossings, as follows:

"As part of a complete application the applicants engineer is to provide an opinion letter regarding the need for an EA for the two proposed Mud Creek channel crossings (Street A and Street B)."

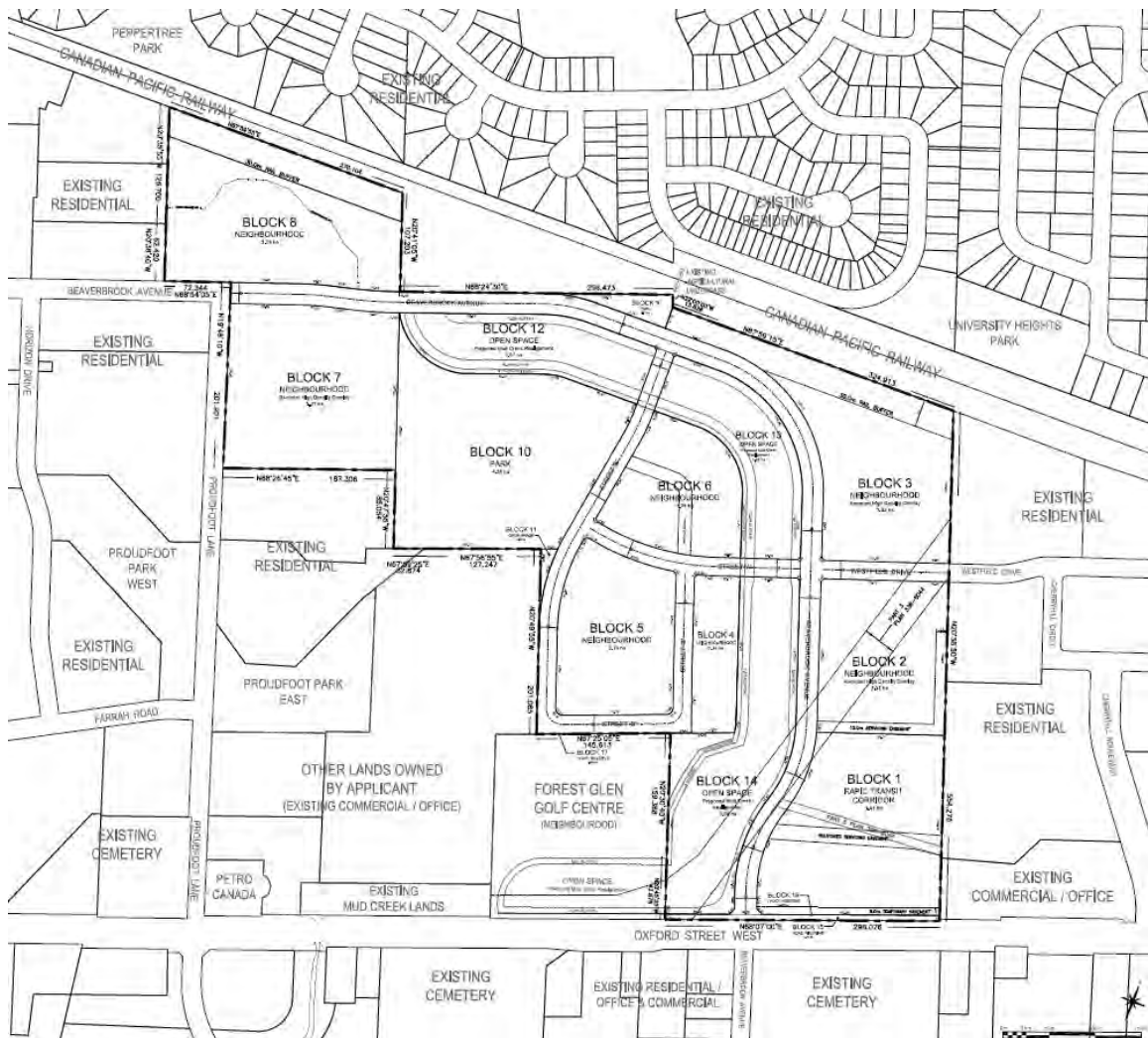
TMIG reviewed the proposed channel crossings, background on Mud Creek, and the proposed development on the Beaverbrook Lands and summarized our findings and opinion in a letter enclosed in **Appendix B**.

2.3 Development Plan

The proposed development will contain a mix of residential typologies ranging from higher-density blocks along Oxford Street West near the extension of Beaverbrook Avenue, transitioning to mid/low rise in the northerly blocks towards and into the Proudfoot Lane parcels.

The latest draft plan, dated July 15, 2021, proposes 2,850 residential units across 8 blocks, with 4.56 hectares of parks and 6.41 hectares of open space around the Mud Creek channel. The proposed draft plan showing the proposed residential blocks, neighbouring lands, and future site access is shown in **Figure 2-2**.

Figure 2-2 Draft Plan



Source: The MBTW Group and W Architects Inc., dated July 15, 2021

While the Draft Plan, dated July 15, 2021, proposes a total of 2,850 residential units as stated above, this study will take into account possible bonus densities which may be permitted, if applied for, on a few of the proposed higher-density blocks, to meet the City’s objectives of an intensified transit corridor, to be determined in the future during the Site Plan Application stage of development. It is understood that the Rapid Transit Corridor along Oxford Street West is currently on hold, however, **for the purposes of a conservative traffic analysis** of future traffic conditions, **25% bonus densities are considered to be permitted**, and have been

included within this study. **Table 2-1** presents the proposed maximum residential unit counts, per block, with the inclusion of possible 25% bonus densities, where applicable, if fully applied for and permitted.

Table 2-1 Residential Unit Count with Bonus Densities

	Area	Units	UPH	UPH with 25% bonus	Units with 25% bonus
Block 1	3.41	850	250	312.5	1065
Block 2	2.31	400	175	218.8	505
Block 3	3.32	490	150	187.5	622
Block 4	0.84	120	150	187.5	157
Block 5	2.15	120	60	No bonus density	120
Block 6	1.75	100	60	No bonus density	100
Block 7	3.27	490	150	187.5	613
Block 8	3.75	280	75	No bonus density	280
Total		2,850			3,462

As detailed in **Table 2-1**, a maximum total of **3,462 residential units are proposed to be included within this study**, representing the maximum unit count including bonus zoning with an increase of 612 units from the Draft Plan, due to the possible application of 25% bonus densities on applicable blocks (proposed R9-7 zones), subject to approval of the Zoning By-law Amendment and Site Plan Application.

2.4 Phasing Plan

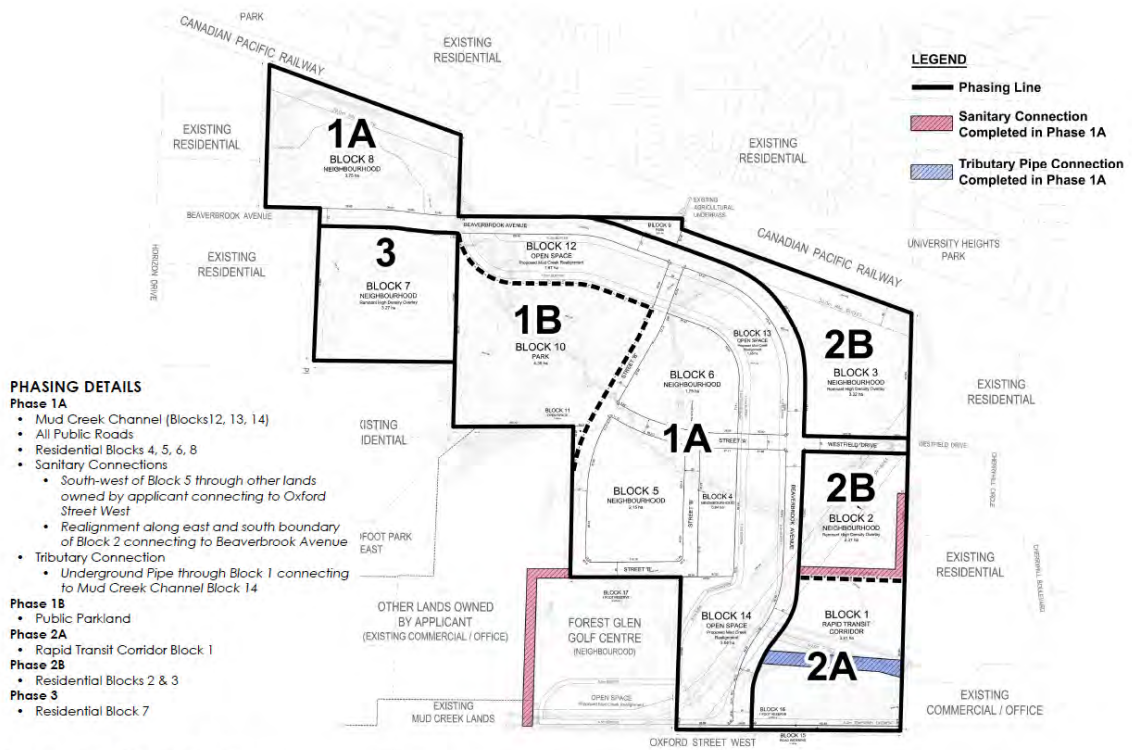
The proposed build-out of the subject lands will be across multiple phases, as illustrated in **Figure 2-3**. Phase 1A and Phase 1B are anticipated to be completed by 2026 and will include the completion of the Mud Creek Channel, all public roads and infrastructure, parkland, and mid-rise residential units in Blocks 4, 5, 6, and 8. The full-build-out of the site is projected to be in 2035 with the addition of mid-rise and high-rise residential buildings in Blocks 1, 2, 3, and 7. **Table 2-2** provides a breakdown of the maximum total residential unit numbers per block, per development phase, assuming 25% bonus densities are permitted.

Table 2-2 Residential Units per Phase

	2026 (Phase 1)	2035 (Full Build-Out)	
Block 1	-	1065	
Block 2	-	505	
Block 3	-	622	
Block 4	157	-	
Block 5	120	-	
Block 6	100	-	
Block 7	-	613	
Block 8	280	-	
Total Units	657	2,805	3,462

As detailed in **Table 2-2**, a total of 657 residential units will be constructed in Phase 1 by 2026, and the remaining 2,805 residential units, in the proposed higher density blocks, are projected to be built by 2035, reflecting the maximum unit count including bonus zoning for the purposes of this study.

Figure 2-3 Phasing Plan



**Preliminary Phasing Plan
 BEAVERBROOK LANDS**

Source: The MBTW Group and W Architects Inc., dated July 15, 2021

2.5 Subdivision Review and Site Circulation

The following section provides detailed summary of subdivision review and site circulation analysis. Excerpts of guidelines and specifications referenced in this section can be found in **Appendix C**. The most recent copy of the Draft Plan can be found in **Figure 2-2** of this report and **Appendix C**.

2.5.1 Site Access

Site access to the development is proposed via the northward extension of Beaverbrook Avenue from its signalized full moves intersection at Oxford Street West. Beaverbrook Avenue will turn westerly through and servicing the Proudfoot Lane parcels, ultimately connecting with Proudfoot Lane at its intersection with the other existing terminus of Beaverbrook Avenue (thus completing the missing Beaverbrook Avenue link). An extension of Westfield Drive is also proposed to link the proposed development with the existing high-rise residential subdivision to the east, which will provide a key road network connection (via Cherryhill Circle/Place) further to the east at Platt's Lane.

2.5.2 Site Access Design

As per City of London Design Specifications and Requirements Manual (2019), Section 2.1.3, the access curb radius requirement is 7.5 metres or 15 metres depending for the future internal accesses/intersections. After reviewing the most recent draft plan, dated July 15, 2021, the site accesses adhere to the curb radii requirements outlined in the City's Design Specifications.

2.5.3 Vehicle Circulation

The vehicle circulation completed using AutoTURN as part of this study has been included in **Appendix C**. The draft plan does not include detailed designs of each individual block showing loading spaces, fire routes, or waste collection pick-up locations. It is recommended that a detailed swept path analysis be conducted during the Site Plan Application stage of development.

2.5.3.1 Passenger Vehicle

A review of passenger vehicle swept path analysis shows no projected conflicts while circulating internal roads, as illustrated in **Figure VMD-1** included in **Appendix C**.

2.5.3.2 Emergency Vehicle

A review of emergency vehicle swept path analysis shows no projected conflicts while circulating internal roads, as illustrated in **Figure VMD-2** included in **Appendix C**.

2.5.3.3 Waste Collection Vehicle

A review of waste collection vehicle swept path analysis shows no projected conflicts while circulating internal roads, as illustrated in **Figure VMD-3** included in **Appendix C**.

2.5.4 Sightline Assessment – Stopping Sight Distance

Stopping sight distance criteria contained within the Geometric Design Guide for Canadian Roads, 2017 Edition, published by the Transportation Association of Canada (TAC), were used for purposes of evaluating stopping sight distances at the unsignalized driveways. These criteria are consistent with the criteria contained in Section 2.1.13 of London's Design Specifications and Requirement Manual. Key parameters include:

- Assumed statutory speed limits on Beaverbrook Avenue, Street A, Street B, Westfield Drive: 50 km/h
- Assumed design speed on Beaverbrook Avenue, Street A, Street B, Westfield Drive: 60 km/h (Posted + 10 km/h)
- Front of the passenger vehicle: 3 metres setback from edge of travelled way
- Required stopping sight distance: 85 metres (based on 60 km/h design speed TAC Table 2.5.2)

The results of the sightline assessment, as shown in **Figures SSD-1 to SSD-3** in **Appendix C**, illustrate that an unobstructed sightline of 85 metres is achievable, measured from 3.0 metres setback from the near edge of the internal roadways, representing the approximate position of the driver stopped at the site access. The sightlines for vehicles approaching the site accesses will be adequate for a 60 km/h design speed on the adjacent road network.

2.5.5 Centerline Radii and Straight Tangent Review

A review of the centerline radii and straight tangents between curves / bends have been conducted in accordance with Section 2.1.2 in London's Design Specifications. Beaverbrook Avenue is assumed to be the neighbourhood connector and Street A, B and Westfield Drive are assumed to be neighbourhood streets. As per Figure 2.1 in the Design Specifications, the centerline radii for bends along Beaverbrook Avenue is required to be a minimum of 150 meters. As seen in the most updated draft plan, Street B has bends of approximately 90 degrees and therefore require a minimum centerline radius of 12.75 metres (based on 9-metre inside street-line radius). Through communication with City Staff, straight tangent between horizontal curves is required to be 10 metres.

After reviewing the centerline radii, all the horizontal curves comply with the minimum radius of 150 metres. TMIG notes that the cross-section for a 23-metre ROW (see **Appendix C**) is not symmetrical, and therefore it was assumed that the on-street parking is on the east side of the ROW and the centerline radii modifications were done accordingly. The straight tangent between two horizontal curves along Beaverbrook Avenue measured to approximately 15 metres, and therefore satisfies the minimum requirement of 10 metres.

2.5.6 Daylight Triangle Review

A review of the draft plan show that the daylighting triangles adhere to the requirements outlined in Section 2.1.3 of London's Design Specifications.

2.5.7 Right-of-Way Review

A review of the draft plan shows that the ROW widths for neighbourhood streets and neighbourhood connectors adhere to the requirements outlined in Section 2.1.5 of London's Design Specifications.

3 EXISTING CONDITIONS

3.1 Road Network

The following describes the existing boundary road infrastructure applicable to the study area. All roads are under the jurisdiction of the City of London.

Oxford Street West is an east-west major arterial road with a five-lane urban cross section featuring two travel lanes in each direction and a middle left-turn lane, primarily serving properties to the south. The cross-section widens to 6 lanes at the intersection at Proudfoot Lane, with an additional right-turn lane. Oxford Street W has a posted speed limit of 60 km/h within most of the study area, which is reduced to 50 km/h, east of the access to Mt Pleasant Cemetery & Crematorium, approximately 160m east of Beaverbrook Avenue. Sidewalks are provided on either side of the street, set back from the road by a strip of green space.

Beaverbrook Avenue is currently separated into two pieces. The southerly section intersecting with Oxford Street W is a north-south local road with a two-lane urban cross section and a posted speed limit of 50 km/h along its length from Riverside Drive to Oxford Street W. Additional left-turn lanes are provided at each end point of the road. A sidewalk is provided along the west side of the road, and a natural ditch along the east side abutting the Cemetery.

The north-westerly half of Beaverbrook Avenue is a two-lane local road with an urban cross section and posted speed limit of 50 km/h. The road extends westerly from Proudfoot Lane, approximately 1.2 km to Oakcrossing Road, where it continues in a north-westerly direction for 950m to Blueglass Drive, turning north and continuing 250 before terminating at Sarnia Road. Sidewalks are provided on either side of the street, set back by a strip of green space. Street parking is periodically available through the residential area west of Capulet Lane.

Proudfoot Lane is a north-south local road with a two-lane urban cross section through the study area, with an additional left turn lane provided for 650m north of Oxford Street W. The street has a posted speed limit of 50 km/h along its length, which continues south-easterly from its intersection at Oxford Street W, before turning east and terminating at its second intersection with Beaverbrook Avenue. Sidewalks are provided on either side of the street, set back from the road by a strip of green space.

Wonderland Road North is a major north-south arterial road with a five-lane urban cross section featuring two travel lanes in each direction and a middle left-turn lane, within the study area. The cross-section widens to 6 lanes at the intersection at Beaverbrook Avenue, with dedicated northbound and southbound left and right turn lanes onto Beaverbrook Avenue. Wonderland Road North has a posted speed limit of 60 km/h within the study area. Sidewalks are provided on either side of the street, in places set back from the road by a strip of green space. Bike lanes are provided on-road in both directions, south of Oxford Street W, and a grade-separated cycling path is available north of Oxford, along the east side of the street.

Westfield Drive is a short east-west local access road, approximately 110m long, serving the hi-rise development to the east of the subject site, intersecting with Cherryhill Circle. Westfield has a two-lane cross section with sidewalks provided on either side of the street, set back by a strip of green space.

Cherryhill Boulevard is a north-south local road, with a two-lane urban cross section, serving the hi-rise development to the east of the subject site, for its approximately 300m length. A wide, tree-filled median separates the northbound and southbound lanes from Oxford Street W to Cherryhill Circle.

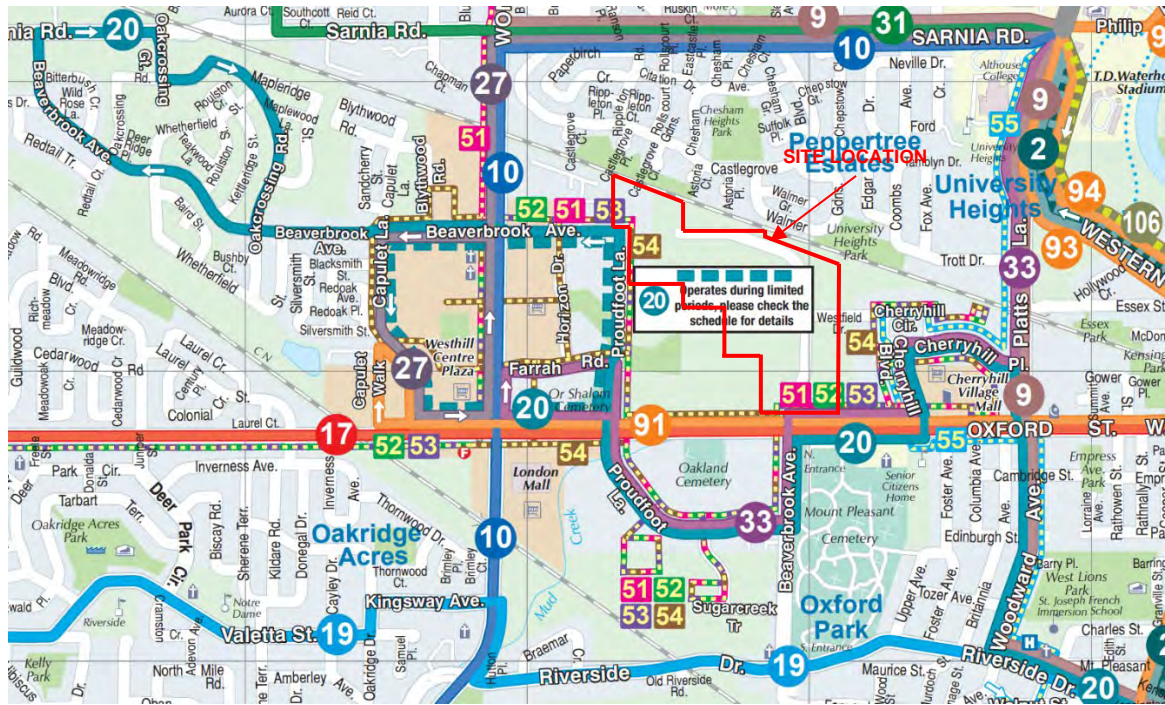
Cherryhill Place is an east-west local road which travels from Cherryhill Circle to Platt's Lane for approximately 350m. The road has a two-lane urban cross section with sidewalks provided on either side of the street, set back by a strip of green space.

Platt's Lane is a north-south local road with a three-lane urban cross section from Oxford Street W to Western Road. The road narrows to one lane as it crossed underneath the rail corridor; traffic signals regulate the flow of vehicles one way at a time under the bridge. Sidewalks are provided on either side of the street, set back from the road by a strip of green space.

3.2 Transit Network

Oxford Street West is marked as a Rapid Transit Boulevard by the City of London. As a result, numerous local and regional connections are available in the vicinity of the subject site, with future connections in development. **Figure 3-1** shows the route network of existing London Transit services around the subject site.

Figure 3-1 Existing London Transit Network



- **Route 17 / 17A / 17B** bus route provides primarily east-west service along Oxford Street West from Argyle Mall to the east of the subject area, to Byron Baseline Road (Route 17A) and Riverbend Park (Route 17B) to the west. The route has a notable stop at Fanshawe College, and operates all day, 7 days a week and on holidays. Route 17 splits into 17A and 17B at the intersection of Oxford Street West / Hyde Park Road. Route 17A continues westbound to Sanatorium Road, before turning southbound and conducting a loop along Commissioners Road West, Griffith Street, Byron Baseline Road, and Boler Road. Route 17B travels southbound on Hyde Park Road, continuing along Riverside Drive, Mill Road, Commissioner Street, and Kains Road in a north-westerly direction, to Riverbend Park, looping back along Riverbend Road and Shore Road. Route 17B to Riverbend operates between 6:00 AM and 6:00 PM on weekdays only, excluding holidays.
- **Route 91** is a limited stop, express bus route providing east-west service along Oxford Street West from Oxford Street West / Wonderland Road to Fanshawe College. Stops are available at Oxford Street West / Capulet Lane, Wharncliffe Road North, and Richmond Street, before terminating at Fanshawe College. Route 91 operates all day Monday to Friday with service every 15 minutes, and has reduced weekend service every 25 minutes, starting, and ending later in the day. Route 91 does not operate on holidays.
- **Route 20** bus route provides generally east-west service along a series of local and main roads from Beaverbrook Avenue / Wonderland Road, looping around downtown along King Street and Queens Avenue, before continuing to Fanshawe College. Route 20 operates all day, 7 days a week, excluding holidays. A diversion from Beaverbrook onto Capulet Lane and Oxford Street West operates in the late evenings after 9 PM and on weekends. Access to the subject site would be short walk from stops at Oxford Street West / Proudfoot Lane and Oxford Street West / Cherryhill Boulevard.

- **Route 33** bus route provides service in a generally south-westerly direction from Alumni Hall at Western University, around Cherryhill Village, west to Wonderland Road and back. Route 33 operated all day Monday to Friday only, excluding holidays. Access to the subject site would be a short walk from Oxford Street West / Beaverbrook Avenue, or from the stop at Cherryhill Place.
- **Community Bus Routes 51, 52, 53, 54 and 55** provide specific local services within the vicinity of the subject site. The routes are specifically designed to serve the needs of seniors and persons with mobility challenges, and all vehicles are fully accessible with a low floor and no steps. All five routes operate from 9:20 AM to 2:30 PM. Access to the subject site would be most conveniently available from the Cherryhill loop and stops.

Route 51 is a Monday Community Bus running from Cherryhill Village Mall to Sherwood Forest Mall at Food Basics grocery store, with loops conducted at Cherryhill, off Proudfoot Lane to Sugarcreek Trail, and on Wonderland Road.

Route 52 is a Tuesday Community Bus, following the same route to Wonderland Road, and stopping at Oakridge Superstore and Remark Fresh Markets.

Route 53 is a Wednesday Community Bus, following the same route, continuing west on Oxford past Wonderland, and north on Hyde Park Road to stop at the Hyde Park Walmart.

Route 54 is a Thursday Community Bus, following the same route through the Cherryhill, Proudfoot and Wonderland loops, before stopping at Farm Boy, Sobeys, and Costco.

Route 55 is a Friday Community Bus, running from Walnut Street, north to Cherryhill Village Mall, around the Cherryhill Loop, and continuing to Masonville Gardens Condominiums.
- Several other routes operate on nearby major roads and provide connections to destinations including the Natural Science Centre (Routes 10, 27), Western University (Routes 10, 27, 31), Masonville Mall (Route 10), Fanshawe College (Route 27), Hyde Park Power Centre (Route 31), and Downtown London (Route 9). These routes would be available via transfers from the above local routes in the vicinity of the subject site.

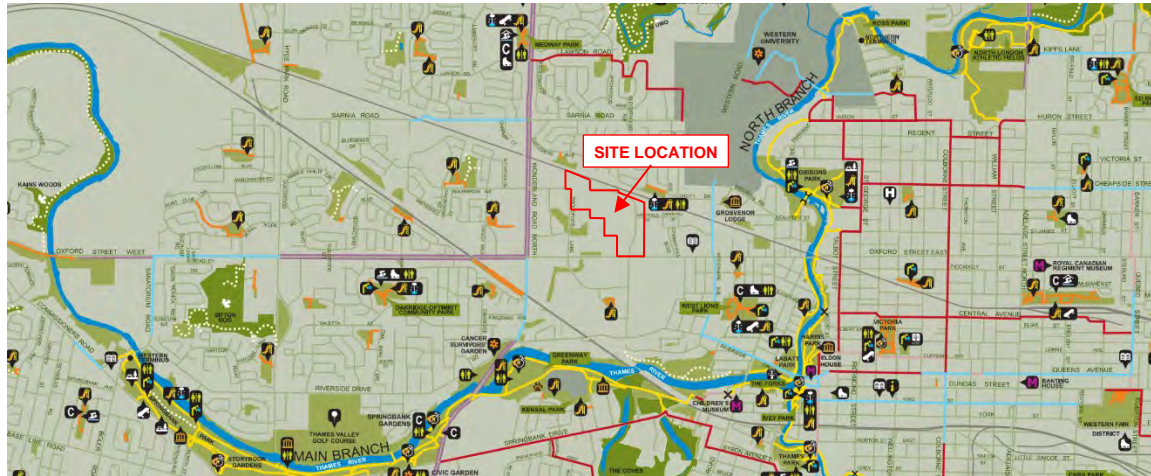
All London Transit buses are designated *accessible* with low-floor access as well as priority and courtesy seating. Buses are also equipped with bike racks as part of the *Bike and Ride* program. London Transit also offers 90-minute transfers, providing unlimited travel in any direction, including return trips, and are automatically added to transit smart cards. Specialized services including Workshop and Medical Shuttles, Paratransit, and Community Buses are available.

3.3 Pedestrian Routes

Pedestrian routes are well connected in the vicinity around the study area. Sidewalks are provided on all surrounding streets in the road network, set back from the roads by strips of green space. Additionally, pedestrian paths are well connected around Cherryhill Village to the east, with several locations with potential for future extensions into the subject site.

The City of London has a pathway network criss-crossing the entire city, connecting neighbourhoods through parks along the Thames River. The Thames Valley Parkway (TVP) is a multi-use pathway system, stretching over 40 km and are asphalt surfaced, between 2.4 and 4 meters wide to allow a broad range of users. Several secondary pathway systems feed into the main network, totalling an additional 150 km. From the vicinity of the subject site, pathways along Wonderland Road to the west, and Woodward Avenue to the east can be utilized as routes to access the Thames Valley Parkway network to the south and east. **Figure 3-2** shows the Thames Valley Parkway map and the existing pedestrian network.

Figure 3-2 Existing Pedestrian Network – Thames Valley Parkway



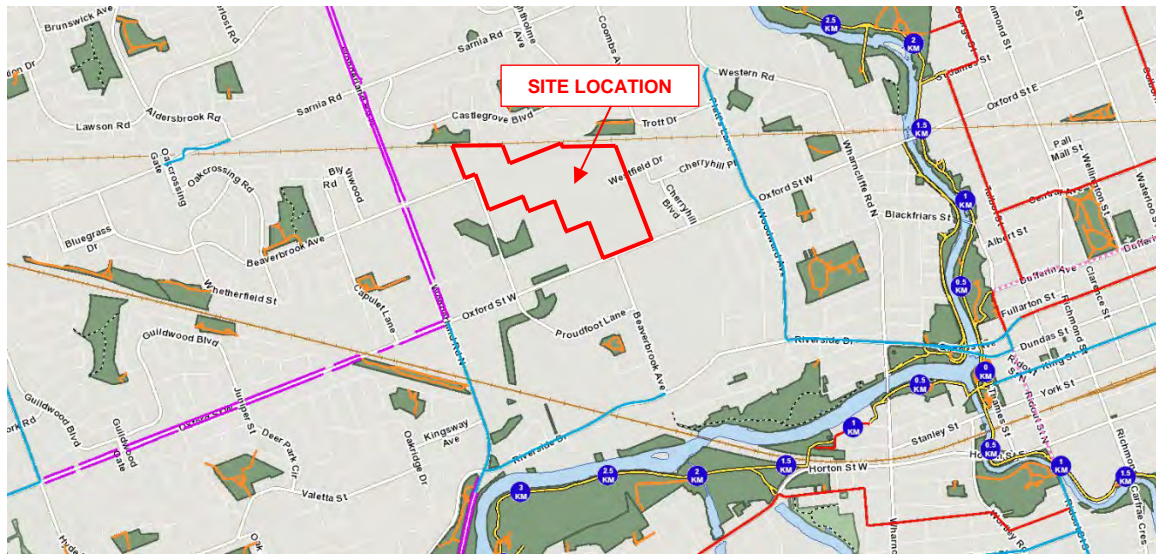
3.4 Cycling Routes

Cycling routes are minimally available in the vicinity of the study area. Bike lanes are available on major roads to the east and west of the subject site, connecting to the Thames Valley Parkway (TVP) multi-use pathway system and connected networks through the city.

To the east, an on-road painted bike lane is provided on Platt's Lane / Woodward Avenue from Western Road to Riverside Drive, connecting to the TVP and continuing east on Queen's Avenue and into Downtown London. West of the study area, an on-road painted bike lane is provided on Wonderland Road, south of Oxford Street West, terminating at Riverside Drive. An on-road painted bike lane is also provided on Riverside Drive from Wonderland Road to Beaverbrook Avenue.

A cycling-friendly path adjacent to the street is provided on Wonderland Road, from Riverside Drive to Commissioners Road West, connecting to the TVP as it crosses the Thames River. A street-adjacent cycling-friendly paths are also available on Wonderland Road, north of Oxford Street West to Gainsborough Road, continuing as a bike lane to Fanshawe Park Road, and on Oxford Street West, west of Wonderland Road. **Figure 3-3** shows the existing cycling network around the subject site.

Figure 3-3 Existing Cycling Network



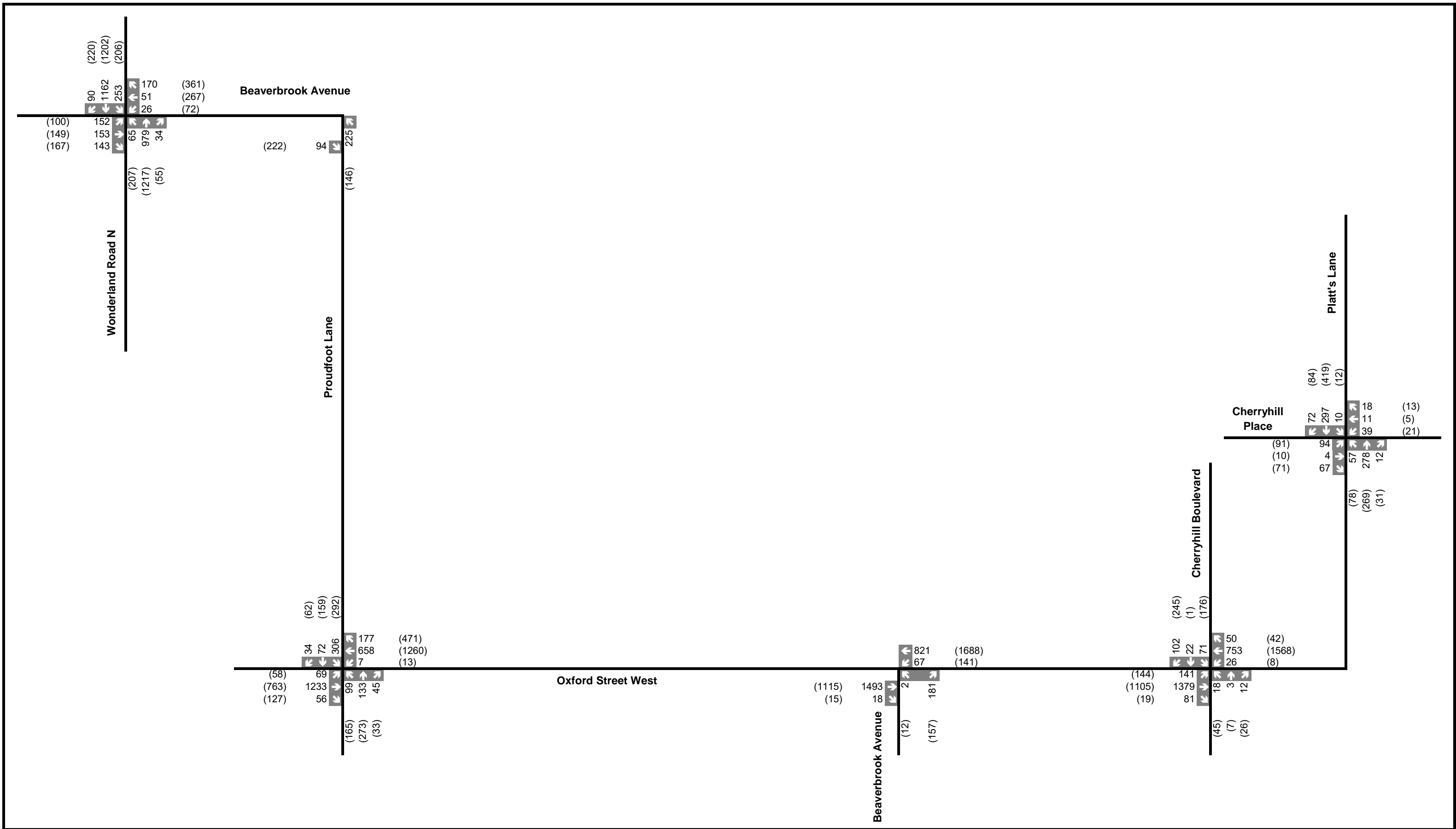
3.5 Existing Traffic

Turning movement counts were collected by TMIG in November 2019 at the outset of this study for all intersections except for Beaverbrook Avenue and Wonderland Road North, which was later added to the scope of this study. New turning movement counts have not obtained in 2021 due to abnormal road conditions at the time of this study caused by the COVID-19 pandemic. TMIG obtained historical traffic data for the intersection of Beaverbrook Avenue and Wonderland Road North from the City of London, and it was approved for use in this study during pre-consultation with City staff, with the application of appropriate growth rates to derive existing traffic conditions. This was in part due to the on-going pandemic, and a lack of notable traffic growth between 2020 and 2021. Appropriate growth rates, approved by the City, were applied to the traffic data to model existing conditions, which was selected as 2021. **Table 3-1** shows the dates of the traffic counts conducted for each of the study intersections.

Table 3-1 Turning Movement Count Data Inventory

Intersection	Traffic Control	Traffic Count Date
Oxford Street West & Beaverbrook Avenue	Unsignalized	November 27, 2019
Oxford Street West and Cherryhill Boulevard	Signalized	November 27, 2019
Oxford Street West and Proudfoot Lane	Signalized	November 27, 2019
Beaverbrook Avenue and Proudfoot Lane	-	November 27, 2019
Cherryhill Place and Platts Lane	Unsignalized	November 27, 2019
Beaverbrook Avenue and Wonderland Road North	Signalized	October 2017

A summary of collected traffic data is included in **Appendix D**. **Figure 3-4** summarizes the baseline traffic volumes during each of the weekday a.m. and weekday p.m. peak hours.



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

Figure 3-4
 Existing Traffic
 Volumes

4 FUTURE BACKGROUND TRAFFIC

4.1 Study Horizon Year

The proposed development was assessed based on existing conditions, 2026 Phase 1, and 2035 full build-out study horizon years. This was supported by the City of London.

4.2 Study Area Transportation Network Improvements

Road Network Improvements

The City of London's 2030 Transportation Master Plan: SmartMoves (May 2013) identified the widening of Wonderland Road from 4 to 6 lanes, through the study area from Riverside Drive to Sarnia Road by 2023. However, during pre-consultation with the City's transportation staff (**Appendix A**), it was noted that the Environmental Assessment is paused, and the road widening delayed indefinitely, following the declaration of a Climate Emergency by the City of London.

Accordingly, **no road network or infrastructure improvements have been considered within the scope of this study.**

Transit Network Improvements

The City of London's 2030 Transportation Master Plan: SmartMoves (May 2013) identified Oxford Street West as a central east-west Bus Rapid Transit (BRT) Corridor. The road was planned to be widened from 4 to 6 lanes to accommodate the future BRT, which would have stopped at the intersection of Oxford Street West and Beaverbrook Avenue, serving the proposed development.

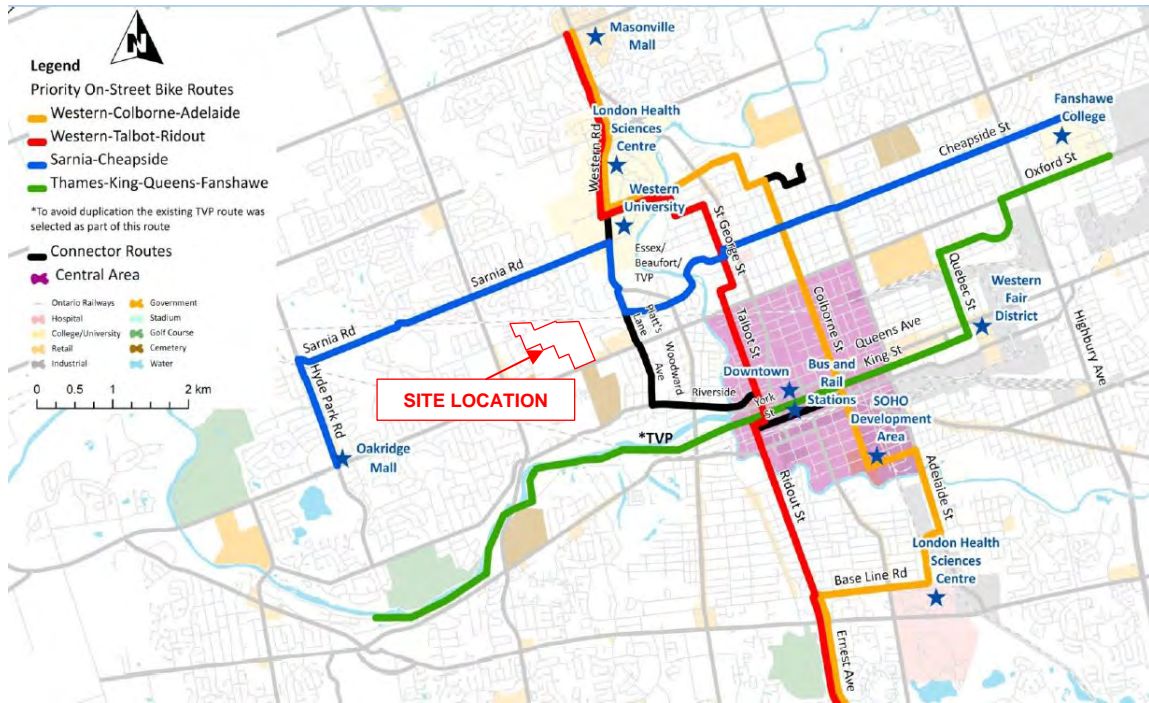
However, during pre-consultation with the City's transportation staff (**Appendix A**), it was noted that the BRT is on hold through this corridor, and it will be some time before planning advances on this project. Therefore, **no transit network improvements, including the Oxford Street BRT, have been considered within the scope of this study.**

It is anticipated that the impacts of any future transportation network improvements would be considered during the Site Plan Application stage of development.

Active Transportation Network Improvements

The City of London's 2030 Transportation Master Plan: SmartMoves (May 2013) identified various improvements to the city-wide cycling network, further detailed in the City's 2016 Cycling Master Plan. Based on the network currently built, and as proposed, future residents of the proposed development will have convenient access to major directions around London, via the Priority On-Street Bike Route along Platt's Lane, connecting to numerous north-south and east-west routes, as shown in **Figure 4-1**.

Figure 4-1 Priority On-Street Bike Routes



4.3 Background Corridor Growth

Background growth rates for study area roads were obtained from the City of London’s transportation staff and refined through additional consultation based on the extended 15-year horizon of this study and the understanding that the proposed development is responsible for most of the growth in the study area.

Accordingly, the following growth rates were confirmed and utilized within this study for 2021, 2026 and 2035 planning horizons:

- For Oxford Street West, Beaverbrook Avenue, Proudfoot Lane, and Wonderland Road North
 - 1% growth rate from existing to 2030
 - 0.5% growth rate from 2030 to 2035
- For Cherryhill Blvd and Platt’s Lane
 - 0.5% growth rate from existing to 2035

4.4 Background Developments

Background developments in the vicinity of the subject lands were identified, and one site was confirmed for inclusion in the study by City of London transportation staff. The background development included is located at 676-700 Beaverbrook Avenue, southwest of the intersection of Oxford Street West and Beaverbrook Avenue.

Table 4-1 summarizes the peak hour site traffic of the background development, as provided by the City of London transportation staff.

Table 4-1 Background Development Trip Generation

Background Development	Lane Use	Peak Hour Site Traffic					
		Weekday AM			Weekday PM		
		In	Out	Total	In	Out	Total
676-700 Beaverbrook Avenue	Residential Units & Office Space	44	90	134	84	68	152

The background development is expected to generate a total of 134 two-way vehicle trips during the a.m. peak hour and 152 two-way vehicle trips during the p.m. peak hour.

The total site trips generated by the background developments were assigned to the study area road network for weekday a.m. and p.m. peak hours, for 2026 Phase 1 and 2035 full-build-out study horizon years.

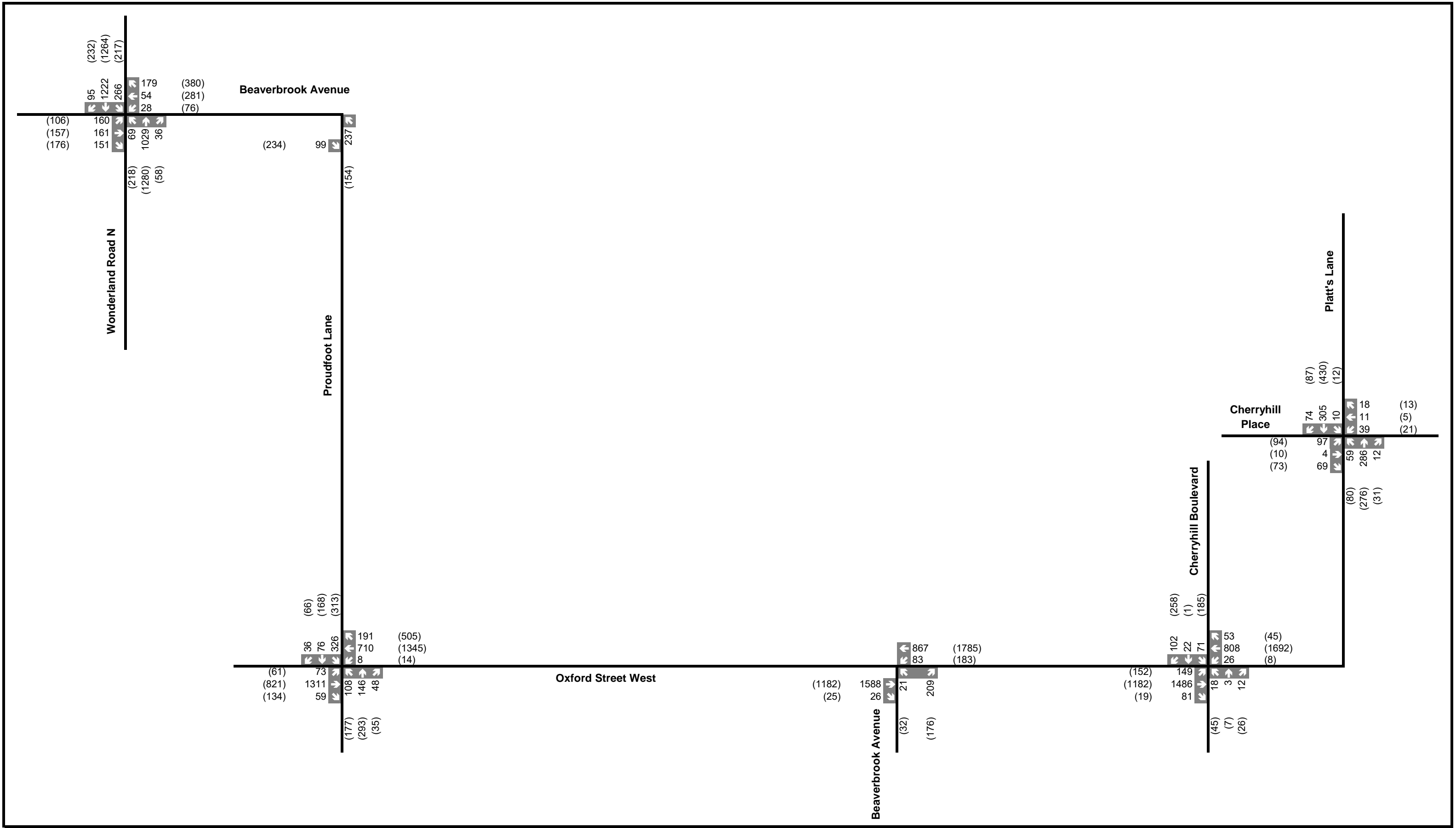
The background traffic volumes for the development listed above is provided in **Appendix E**.

4.5 Background Traffic Volumes

The 2026 Future Background weekday a.m. and p.m. peak hour traffic volumes were estimated by combining 2021 existing traffic, plus five years of compounded corridor growth and traffic volumes from the background development at 676-700 Beaverbrook Avenue.

The 2035 Future Background weekday a.m. and p.m. peak hour traffic volumes were estimated by combining 2021 existing traffic, plus 15 years of corridor growth (rates reduced from 1% to 0.5% for main roads after 2030), and traffic volumes from the above background development.

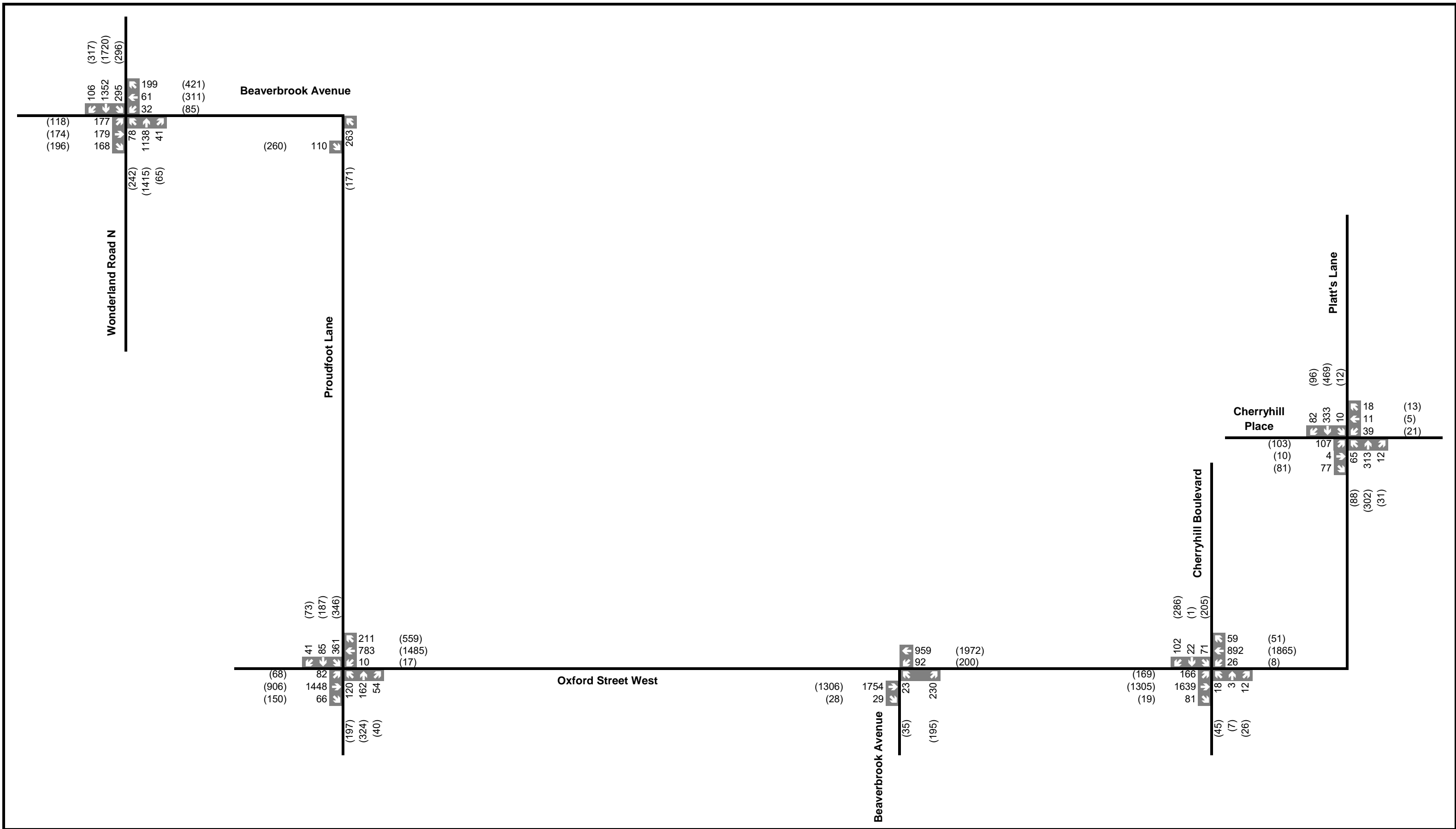
The 2026 and 2035 future background traffic volumes are presented in **Figure 4-2** and **Figure 4-3**.



Legend

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

Figure 4-2
Future Background
2026



Legend

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

Figure 4-3
Future Background
2035

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5 SITE GENERATED TRAFFIC

5.1 Modal Split

Due to the residential nature of this development, and the considerable horizon for the study, a conservative approach was taken in applying transit and active transportation reductions to the study analysis. The City of London's TIS Guidelines reference the London TMP's goal of reducing single-occupancy vehicle (SOV) trips by 10% by 2024, from 2004 levels.

The updated 2013 TMP builds upon this sustainable reduction in vehicle trips by identifying mode share targets up to 2030, based on key areas, nodes, and corridors in the City. The subject site is located on a major "corridor", Oxford Street West, however, for the purposes of a conservative analysis, and since the Oxford Street BRT is no longer considered within this study, the lower city-wide targets have been applied.

Accordingly, a 15% transit and 11% active transportation mode split is applied to the study in the 2026 horizon, representing 2020 city-wide targets. Subsequently, a 20% transit and 15% active transportation is utilized for the 2035 horizon year, representing 2030 city-wide mode share targets. The overall non-automobile mode share reduction represents 26% and 35% in the 2026 and 2035 horizons, respectively.

Despite the considerable corridor growth rate applied to the study, no city-wide reduction was considered to align background trips with the City's mode share targets by the 2026 and 2035 planning horizons.

5.2 Site Trip Generation

The proposed draft plan of subdivision is comprised of 2,850 residential units across eight blocks and three phases. In consideration of the possibility for bonus density of 25% on certain blocks, if fully applied for and permitted, **this study analyzes the maximum total unit count of 3,462 residential units**, including possible bonus zoning, for a conservative assessment of future traffic conditions.

Site traffic generated by the proposed residential subdivision was estimated by applying the trip rates found under Land Use Code (LUC) 221 & LUC 222 in the ITE Trip Generation Manual, 10th Edition, for weekday a.m. and p.m. peak hours, for mid-rise and high-rise blocks, respectively. **Table 5-1** summarizes the estimated total trip generation of the subject site for the maximum total count of 3,462 residential units.

Table 5-1 Site Trip Generation

Horizon	Blocks	Land Use	Parameters	Peak Hour Trip Generation					
				Weekday AM			Weekday PM		
				In	Out	Total	In	Out	Total
Phase 1 (2026)	4, 5, 6, 8	Multifamily Housing (Mid-rise) LUC 221 657 units	Fitted Curve Equation	Ln(T) = 0.98 Ln(X) – 0.98			Ln(T) = 0.96 Ln(X) – 0.63		
			Trip Distribution	26%	74%	100%	61%	39%	100%
			Gross Trips (H1)	45	130	175	131	83	214
			Total Site Trips (H1)	45	130	175	131	83	214
Full Build-Out (2035)	4, 5, 6, 8	Multifamily Housing (Mid-rise) LUC 221 657 units	Fitted Curve Equation	Ln(T) = 0.98 Ln(X) – 0.98			Ln(T) = 0.96 Ln(X) – 0.63		
			Trip Distribution	26%	74%	100%	61%	39%	100%
			Gross Trips (H1)	40	113	153	114	73	187
	1, 2, 3, 7	Multifamily Housing (High-rise) LUC 222 2,805 units	Fitted Curve Equation	T = 0.28 X + 12.86			T = 0.34 X + 8.56		
			Trip Distribution	24%	76%	100%	61%	39%	100%
			Gross Trips (H1)	136	429	565	400	256	656
	1-8	3,462 units	Total Site Trips (H2)	176	542	718	514	329	843

As outlined in **Table 5-1**, by the build-out of Phase 1 in 2026, the proposed draft plan is expected to generate a total of 175 two-way vehicle trips during the a.m. peak hour, consisting of 45 inbound trips and 130 outbound trips. During the p.m. peak hour, it is expected to generate 214 two-way vehicle trips consisting of 131 inbound trips and 83 outbound trips.

In 2035, the full build-out of the draft plan is expected to generate a total of 718 two-way vehicle trips during the a.m. peak hour, consisting of 176 inbound trips and 542 outbound trips. During the p.m. peak hour, it is expected to generate 843 two-way vehicle trips consisting of 514 inbound trips and 329 outbound trips.

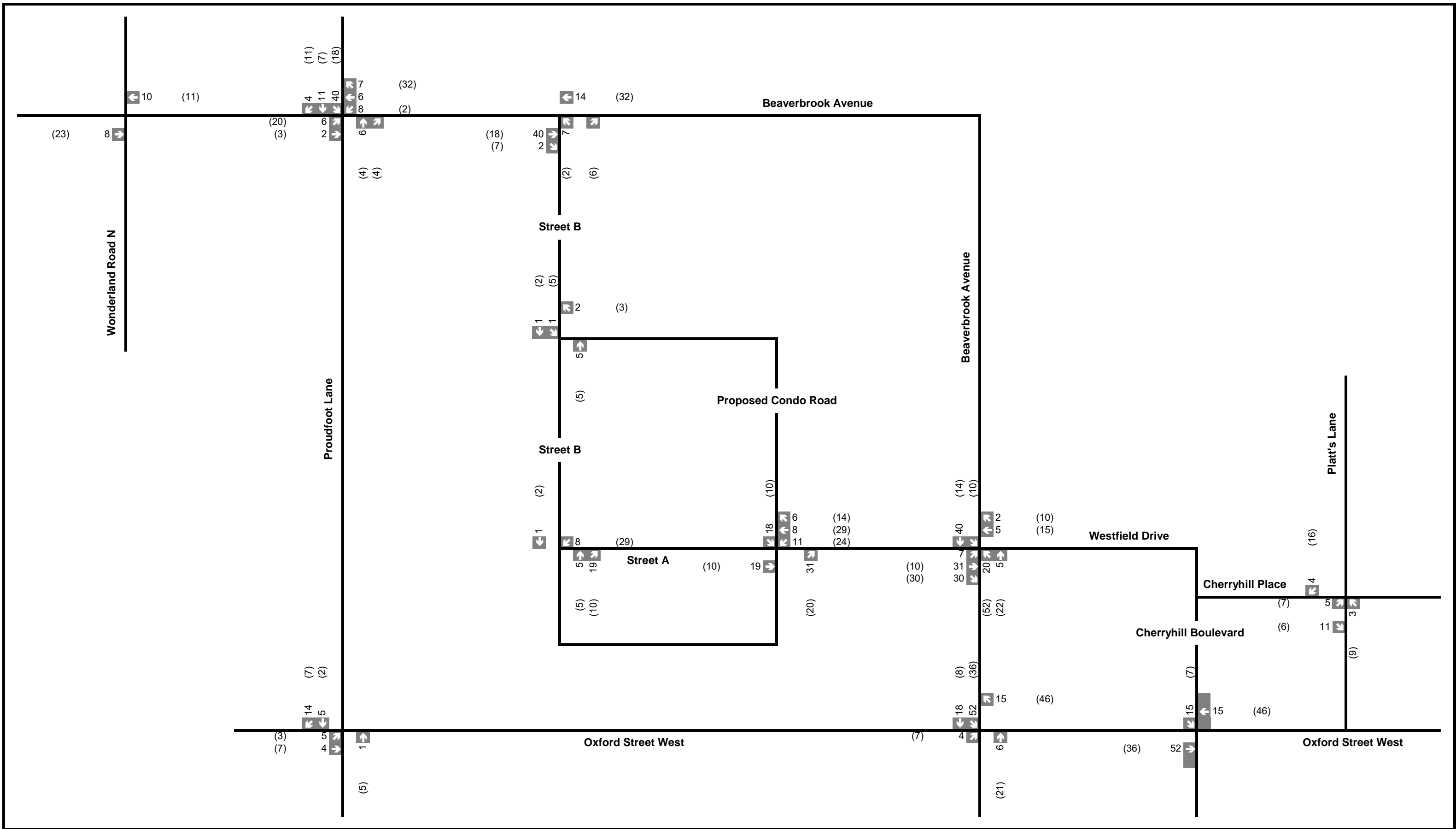
5.3 Site Trip Distribution and Assignment

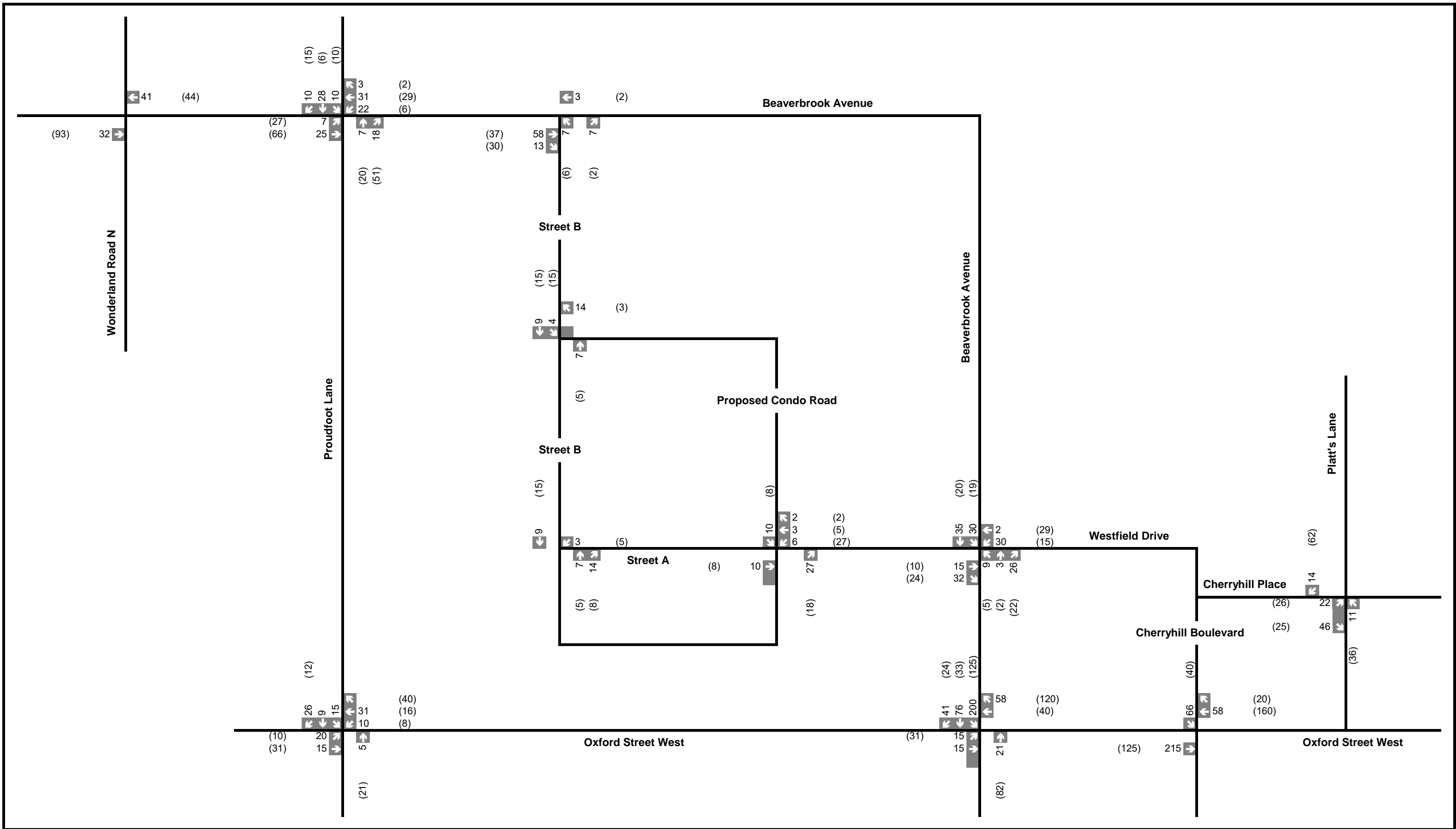
The distribution of site traffic was derived based on reasonable assumptions for the site’s location in the City of London and refined in accordance with patterns observed in existing traffic data and the trip distribution methodology followed in background developments. The site traffic was assigned to the road network, accordingly, broken down by trips generated from each of the eight residential blocks within the subject site. **Table 5-2** summarizes the proportion of site trips distributed to the study area by direction of approach and departure for both the a.m. and p.m. peak hours.

Table 5-2 Site Trip Distribution

Trip Orientation (To / From)	Distribution (%) AM		Distribution (%) PM	
	Inbound	Outbound	Inbound	Outbound
North	20%	10%	30%	20%
East	30%	50%	30%	50%
South	30%	35%	40%	25%
West	20%	5%	0%	5%
Total	100%	100%	100%	100%

The estimated passenger vehicle site trips generated by the proposed development were assigned to the study road network for the 2026 and 2035 planning horizons, as shown in **Figure 5-1** and **Figure 5-2**.

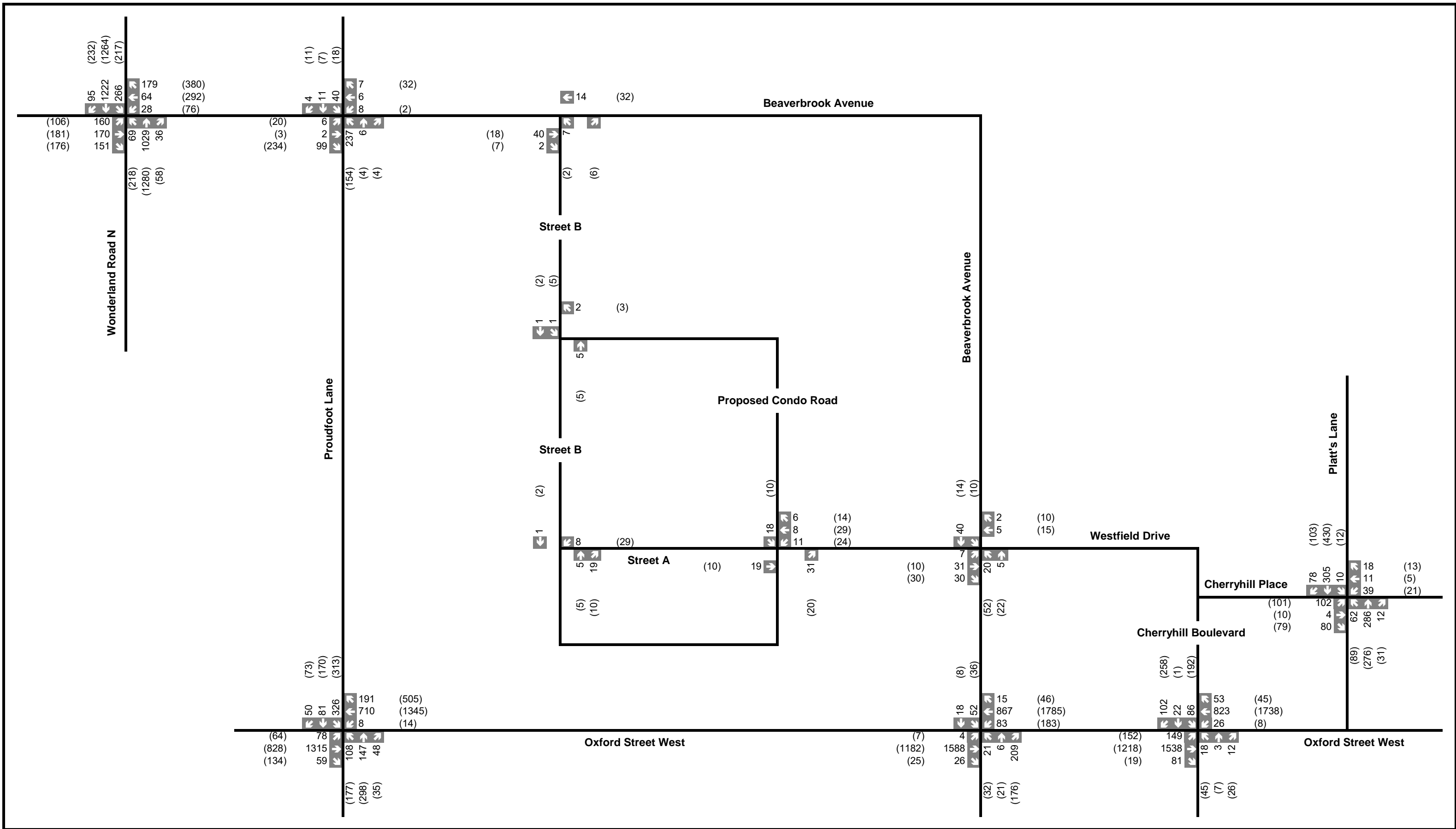




6 TOTAL TRAFFIC VOLUMES

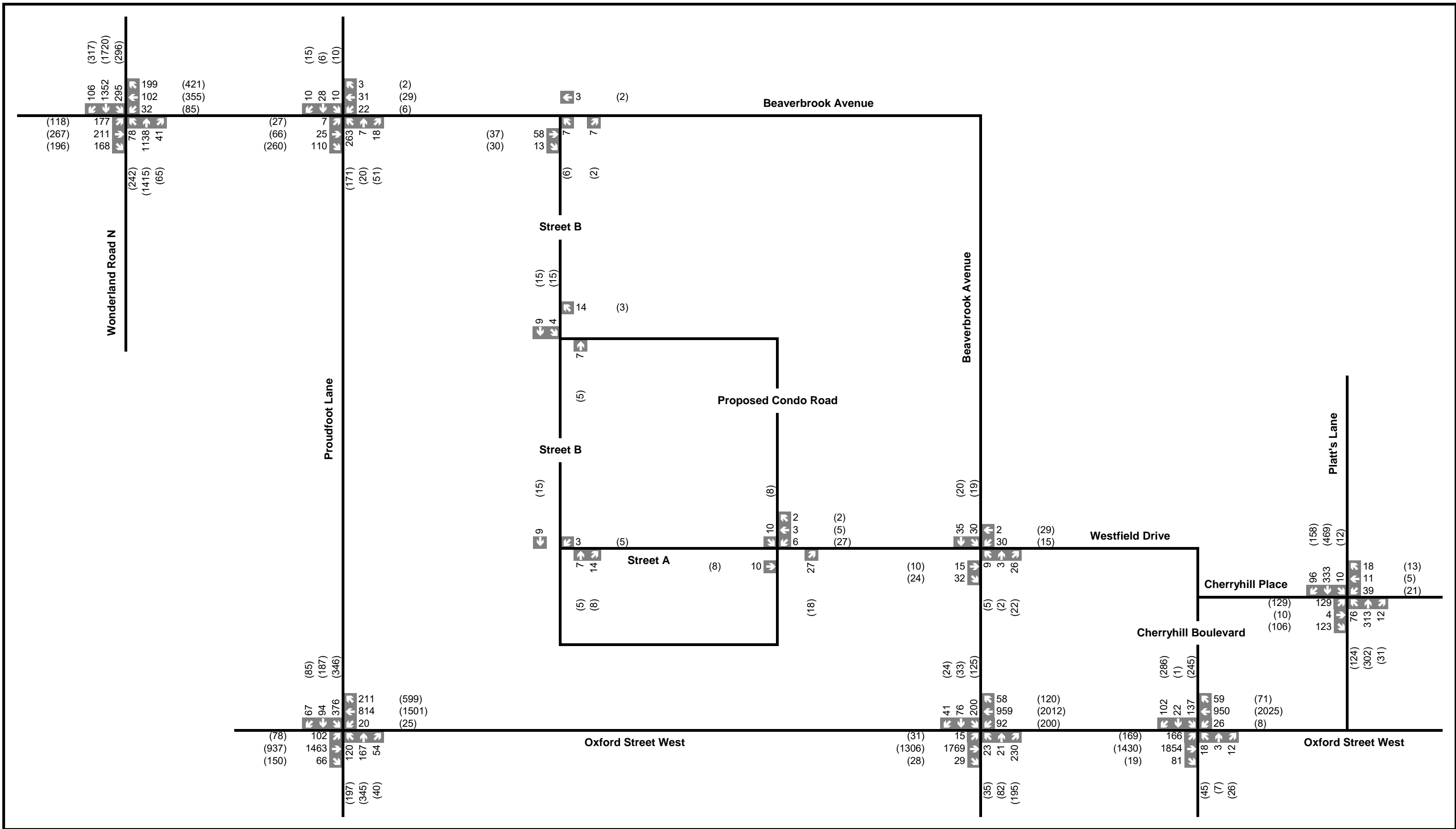
The future total traffic volumes were derived by combining the projected future background traffic volumes with the projected site trip assignment.

Figure 6-1 and **Figure 6-2** illustrate the future total traffic volumes for the 2026 and 2035 planning horizons during the weekday a.m. and weekday p.m. peak hours, respectively.



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

Figure 6-1
 Future Total 2026



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

Figure 6-2
 Future Total 2035

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7 TRAFFIC CAPACITY ANALYSIS

The capacity analysis identifies how well the intersections and access driveways 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 10 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, and LOS indicators. 'Critical' intersections and movements include:

- overall intersection operations, through movements or shared through/turning movements with a LOS F or v/c ratio increased to 0.90 or above; and
- v/c ratios for exclusive movements that will exceed 1.00 or LOS F.

The following tables summarize the Synchro/HCM capacity results for the study intersections during the weekday a.m. and weekday p.m. peak hours under existing (2021), future background and future total (2026 and 2035) traffic conditions. Detailed Synchro reports are attached in **Appendix F**.

7.1 Existing Conditions 2021

The traffic capacity analysis results for the intersections in the study area are summarized in **Table 7-1** for the weekday a.m. and weekday p.m. peak hours under existing traffic conditions.

Table 7-1 Existing 2021 Capacity Analysis

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Wonderland Road at Beaverbrook Avenue	<i>Overall</i>	0.75	24	C	0.82	32	C
	EBL	0.73	61	E	1.03	147	F
	EBT	0.49	48	D	0.44	46	D
	EBT	0.17	46	D	0.18	43	D
	WBL	0.16	28	C	0.39	45	D
	WBT	0.16	28	C	0.76	53	D
	WBR	0.13	66	E	0.68	49	D
	NBL	0.30	12	B	0.77	28	C
	NBT	0.54	18	B	0.70	24	C
	NBR	0.03	12	B	0.04	14	B
	SBL	0.73	19	B	0.71	30	C
	SBT	0.57	14	B	0.67	22	C
SBR	0.08	9	A	0.22	15	B	
Proudfoot Lane at Oxford Street West	<i>Overall</i>	0.75	29	C	0.77	31	C
	EBL	0.20	15	B	0.60	46	D
	EBTR	0.71	23	C	0.54	22	C

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	WBL	0.06	14	B	0.06	16	B
	WBT	0.35	19	B	0.71	26	C
	WBR	0.13	32	C	0.46	10	A
	NBL	0.67	65	E	0.84	77	E
	NBT	0.58	57	E	0.79	62	E
	NBR	0.03	49	D	0.02	43	D
	SBL	0.76	50	D	0.80	57	E
	SBTR	0.18	36	D	0.33	27	C
Beaverbrook Avenue at Oxford Street West (unsignalized)	EBTR	0.31	0	A	0.25	0	A
	WBL	0.18	17	C	0.29	15	B
	WBT	0.24	0	A	0.54	0	A
	NBL	0.05	99	F	0.64	342	F
	NBR	0.56	29	D	0.41	20	C
Oxford Street West at Cherryhill Boulevard	<i>Overall</i>	<i>0.62</i>	<i>10</i>	<i>B</i>	<i>0.86</i>	<i>26</i>	<i>C</i>
	EBL	0.33	4	A	0.74	46	D
	EBTR	0.61	4	A	0.52	9	A
	WBL	0.16	10	A	0.04	11	B
	WBTR	0.40	10	A	0.89	29	C
	NBL	0.13	50	D	0.20	42	D
	NBTR	0.02	49	D	0.04	40	D
	SBL	0.50	55	E	0.82	67	E
	SBT	0.10	50	D	0.00	40	D
	SBR	0.08	50	D	0.32	43	D
Platt's Lane at Cherryhill Place (unsignalized)	EBLTR	0.54	29	D	0.98	106	F
	WBLTR	0.27	23	C	0.26	33	D
	NBL	0.05	8	A	0.10	9	A
	NBTR	0.18	0	A	0.20	0	A
	SBL	0.01	8	A	0.02	9	A
	SBTR	0.23	0	A	0.34	0	A

Under 2021 existing conditions, all intersections are operating within capacity, with acceptable Levels of Service and reasonable delays for most movements.

At the signalized intersection of Wonderland Road North and Beaverbrook Avenue, the eastbound left and westbound right movements are operating with LOS 'E' during the weekday a.m. peak hour, due to delays of 61 and 66 seconds, respectively. However, the overall v/c and LOS is acceptable during the peak

hour. In the p.m. peak hour, the eastbound left is over capacity with a v/c of 1.03, delays of 147 seconds and LOS 'F'. Improved signal coordination may be considered under future conditions to mitigate delays.

The signalized intersection of Proudfoot Lane at Oxford Street West is operating at an overall LOS 'C' during weekday a.m. and p.m. peak hours, and sufficient reserve capacity. The northbound left and northbound through movements are operating with LOS 'E' in both peak hours, due to delays related to the cycle length favouring east-west movements. Improved signal coordination may be considered under future conditions.

At the unsignalized intersection of Beaverbrook Avenue and Oxford Street West, the northbound left is operating with LOS 'F' due to delays of 99 and 342 seconds during the a.m. and p.m. peak hours, respectively. This is a common occurrence when a smaller roadway under stop-control intersects a major roadway under free flow conditions. However, a traffic signal warrant analysis was conducted at the intersection under future conditions to determine if a signal is required to improve conditions when Beaverbrook Avenue is extended north into the subject lands.

The signalized intersection of Oxford Street West and Cherryhill Boulevard is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. The southbound left movement is operating with LOS 'E' due to delays of 55 and 67 seconds in the a.m. and p.m. peak hours, respectively.

The unsignalized intersection of Platt's Lane and Cherryhill Place is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. However, the eastbound left/through/right movement is operating with a v/c of 0.98 and delays of 106 seconds resulting in an LOS 'F'.

7.2 Future Background 2026

The traffic capacity analysis results for the intersections in the study area are summarized in **Table 7-2** for weekday a.m. and weekday p.m. peak hours under 2026 future background traffic conditions. It should be noted that the peak hour factor was increased to 1.00 for the entire network in this scenario, from existing conditions. This improvement is carried through all future scenarios.

Table 7-2 Future Background 2026 Capacity Analysis

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Wonderland Road at Beaverbrook Avenue	Overall	0.72	22	C	0.77	28	C
	EBL	0.71	60	E	0.93	111	F
	EBT	0.48	48	D	0.39	43	D
	EBT	0.14	45	D	0.13	40	D
	WBL	0.16	45	D	0.37	44	D
	WBT	0.16	45	D	0.68	50	D
	WBR	0.12	44	D	0.59	48	D
	NBL	0.28	11	B	0.75	25	C
	NBT	0.51	17	B	0.64	21	C
	NBR	0.03	12	B	0.04	13	B
	SBL	0.69	16	B	0.68	24	C
	SBT	0.55	14	B	0.61	18	B
SBR	0.08	9	A	0.20	13	B	

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Proudfoot Lane at Oxford Street West	<i>Overall</i>	0.78	29	C	0.80	31	C
	EBL	0.22	16	B	0.64	50	D
	EBTR	0.74	24	C	0.55	21	C
	WBL	0.08	13	B	0.07	15	B
	WBT	0.37	17	B	0.71	24	C
	WBR	0.14	39	D	0.49	10	A
	NBL	0.70	67	E	0.86	78	E
	NBT	0.61	57	E	0.79	60	E
	NBR	0.03	49	D	0.03	42	D
	SBL	0.79	45	D	0.94	70	E
Beaverbrook Avenue at Oxford Street West (unsignalized)	EBTR	0.33	0	A	0.25	0	A
	WBL	0.24	19	C	0.35	15	C
	WBT	0.26	0	A	0.53	0	A
	NBL	0.71	268	F	1.81	839	F
	NBR	0.68	39	E	0.42	20	C
Oxford Street West at Cherryhill Boulevard	<i>Overall</i>	0.61	14	B	0.81	22	C
	EBL	0.32	8	A	0.73	45	D
	EBTR	0.60	12	B	0.49	7	A
	WBL	0.14	9	A	0.03	10	A
	WBTR	0.39	10	A	0.84	23	C
	NBL	0.12	51	D	0.18	40	D
	NBTR	0.02	50	D	0.04	39	D
	SBL	0.47	55	E	0.75	57	E
	SBT	0.09	50	D	0.00	39	D
	SBR	0.08	50	D	0.28	41	D
Platt's Lane at Cherryhill Place (unsignalized)	EBLTR	0.52	27	D	0.72	51	F
	WBLTR	0.24	22	C	0.18	25	D
	NBL	0.05	8	A	0.08	9	A
	NBTR	0.18	0	A	0.18	0	A
	SBL	0.01	8	A	0.01	9	A
	SBTR	0.22	0	A	0.30	0	A

Under 2026 future background conditions, all intersections are operating within capacity, with acceptable Levels of Service and reasonable delays for most movements.

At the signalized intersection of Wonderland Road North and Beaverbrook Avenue, the eastbound left continues to operate with an LOS 'E' and LOS 'F' during weekday a.m. and p.m. peak hours respectively, as in the existing condition. In the a.m., delays of 60 seconds contribute to the LOS 'E', however the overall v/c and LOS is acceptable during the peak hour. In the p.m., PHF optimization reduced the movement's v/c from 1.03 to 0.93, and delays down to 111 seconds.

The signalized intersection of Proudfoot Lane at Oxford Street West is operating at an overall LOS 'C' during weekday a.m. and p.m. peak hours, and sufficient reserve capacity. The northbound left and northbound through movements are operating with LOS 'E' in both peak hours, due to delays related to the cycle length favouring east-west movements. The southbound left turn also operates with a LOS 'E' due to a v/c of 0.94 in the p.m. peak hour.

At the unsignalized intersection of Beaverbrook Avenue and Oxford Street West, the northbound left is operating with LOS 'F' due to delays of 268 and 839 seconds during the a.m. and p.m. peak hours, respectively. As stated previously, these high delays are common for this intersection configuration, however, a signal warrant analysis was conducted to determine if the intersection should be signalized to improve conditions. As detailed in **Section 8**, a traffic signal was not warranted for the study intersection for Future Background 2026 volumes, however, may be recommended due to poor existing levels of service. A signalization sensitivity analysis is presented in **Section 7.3** for this intersection.

The signalized intersection of Oxford Street West and Cherryhill Boulevard is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. The southbound left movement is operating with LOS 'E' due to delays of 55 and 57 seconds in the a.m. and p.m. peak hours, respectively.

The unsignalized intersection of Platt's Lane and Cherryhill Place is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. However, the eastbound left/through/right movement is operating with a LOS of 'F' due to a v/c of 0.72 and delays of 51 seconds, a considerable improvement from existing conditions.

7.3 Future Background 2026 – Sensitivity

As stated, a signal warrant analysis was conducted to determine if the intersection of Oxford Street West and Beaverbrook Avenue should be signalized under Future Background 2026 conditions, in response to corridor growth. The signalization was not warranted under this horizon; however, a sensitivity analysis was conducted to determine the impacts on the intersection should it be signalized. **Table 7-3** compares the traffic capacity analysis for the Oxford Street West and Beaverbrook Avenue intersection, under stop control and signalization, for weekday a.m. and weekday p.m. peak hours under 2026 future background traffic conditions.

Table 7-3 Future Background 2026 Sensitivity Analysis

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Beaverbrook Avenue at Oxford Street West (unsignalized)	EBTR	0.33	0	A	0.25	0	A
	WBL	0.24	19	C	0.35	15	C
	WBT	0.26	0	A	0.53	0	A
	NBL	0.71	268	F	1.81	839	F
	NBR	0.68	39	E	0.42	20	C
Beaverbrook Avenue at Oxford Street West (signalized)	<i>Overall</i>	<i>0.64</i>	<i>19</i>	<i>B</i>	<i>0.61</i>	<i>8</i>	<i>A</i>
	EBTR	0.67	21	C	0.49	5	A
	WBL	0.41	16	B	0.51	5	A

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	WBT	0.32	2	A	0.62	5	A
	NBL	0.12	54	D	0.28	59	E
	NBR	0.59	62	E	0.12	58	E

Based on the results from the above sensitivity analysis, traffic operations at the intersection of Oxford Street West and Beaverbrook Avenue are significantly improved following signalization. The considerable delays at the northbound left movement are eliminated and the intersection operates with significant reserve capacity and acceptable delays and overall Levels of Service.

Based on these findings, signalization of this intersection was maintained in all future scenarios to improve traffic conditions. As the delays and adverse traffic conditions are triggered by background corridor growth, prior to the implementation of site traffic, **it is recommended that the City of London continue to study and monitor the intersection of Oxford Street West and Beaverbrook Avenue to identify when signalization of the intersection might be appropriate** (in our opinion this improvement is recommended prior to the 2026 interim build-out of the subject site).

7.4 Future Background 2035

The traffic capacity analysis results for the intersections in the study area are summarized in **Table 7-4** for weekday a.m. and weekday p.m. peak hours under 2035 future background traffic conditions.

It should be noted that the cycle length at the intersection of Wonderland Road North and Beaverbrook Avenue was increased to 140 seconds in the p.m. peak hour. In addition, a protected phase was added for the eastbound left movement and the signal timings were optimized for both peak hours.

In addition, a protected phase was added for the eastbound left and northbound left movements at the intersection of Oxford Street West and Proudfoot Lane, and signal timings were optimized for both peak hours.

Finally, as stated in **Section 7.3**, the signalization of the intersection of Oxford Street West and Beaverbrook Avenue was maintained from the Future Background 2026 scenario, despite not yet being warranted, as detailed in **Section 8**.

Table 7-4 Future Background 2035 Capacity Analysis

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Wonderland Road at Beaverbrook Avenue	<i>Overall</i>	0.79	28	C	0.97	55	D
	EBL	0.76	62	E	0.83	79	E
	EBT	0.47	46	D	0.36	42	D
	EBT	0.24	43	D	0.17	40	D
	WBL	0.20	50	D	0.38	49	D
	WBT	0.24	50	D	0.83	68	E
	WBR	0.14	49	D	0.82	70	E
	NBL	0.40	17	B	0.98	98	F
	NBT	0.67	27	C	0.90	45	D

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	NBR	0.03	17	B	0.05	22	C
	SBL	0.74	30	C	0.90	71	E
	SBT	0.62	17	B	1.00	56	E
	SBR	0.09	10	B	0.37	24	C
Proudfoot Lane at Oxford Street West	<i>Overall</i>	0.91	29	C	0.98	39	D
	EBL	0.25	14	B	0.67	43	D
	EBTR	0.81	26	C	0.64	25	C
	WBL	0.13	15	B	0.11	18	B
	WBT	0.48	13	B	0.94	40	D
	WBR	0.17	1	A	0.56	5	A
	NBL	0.50	48	D	0.74	55	D
	NBL	0.67	61	E	0.93	82	F
	NBR	0.04	49	D	0.03	43	D
	SBL	0.93	68	E	0.98	81	F
	SBTR	0.29	40	D	0.46	36	D
Beaverbrook Avenue at Oxford Street West	<i>Overall</i>	<i>0.75</i>	13	<i>B</i>	<i>0.68</i>	9	<i>A</i>
	EBTR	0.77	8	A	0.56	7	A
	WBL	0.59	25	C	0.60	9	A
	WBT	0.37	7	A	0.68	6	A
	NBL	0.10	50	D	0.29	59	E
	NBR	0.72	67	E	0.13	58	E
Oxford Street West at Cherryhill Boulevard	<i>Overall</i>	<i>0.66</i>	16	<i>B</i>	0.93	33	C
	EBL	0.39	8	A	0.85	66	E
	EBTR	0.66	15	B	0.57	10	A
	WBL	0.18	10	B	0.04	11	B
	WBTR	0.44	10	B	0.97	39	D
	NBL	0.12	51	D	0.18	41	D
	NBTR	0.02	50	D	0.04	39	D
	SBL	0.47	55	E	0.85	71	E
	SBT	0.09	50	D	0.00	39	D
	SBR	0.08	50	D	0.65	50	D
Platt's Lane at Cherryhill Place (unsignalized)	EBLTR	0.63	36	E	0.90	84	F
	WBLTR	0.28	25	D	0.21	30	D
	NBL	0.06	9	A	0.10	9	A

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	NBTR	0.19	0	A	0.20	0	A
	SBL	0.01	8	A	0.01	9	A
	SBTR	0.24	0	A	0.33	0	A

Under 2035 future background conditions, all intersections are operating with some reserve capacity, acceptable Levels of Service and reasonable delays for most movements.

At the signalized intersection of Wonderland Road North and Beaverbrook Avenue, background corridor growth has resulted in several movements in the p.m. peak hour nearing capacity, with an overall v/c of 0.97. The eastbound left, westbound through, westbound right, southbound left and southbound through movements are at LOS 'E' in the p.m., due primarily to delays related to the increased cycle length of 140 seconds. The Northbound left turn has a v/c of 0.98, delays of 98 seconds and LOS 'F' and the southbound through has a v/c of 1.0 in the p.m. peak hour.

The signalized intersection of Proudfoot Lane at Oxford Street West is operating at an overall LOS 'C' and 'D' during weekday a.m. and p.m. peak hours, with v/c of 0.91 and 0.98, respectively. The northbound through and southbound left have delays between 61-68 seconds in the a.m. peak hour, resulting in LOS 'E'. In the p.m. peak hour, the same movements have delays between 81-82 seconds and v/c of 0.93 and 0.98, resulting in LOS 'F' for both movements.

At the signalized intersection of Beaverbrook Avenue and Oxford Street West, the northbound left is operating with LOS 'E' in the p.m. peak hour due to delays of 59 seconds; a vast improvement following signalization. The northbound right has LOS 'E' during the a.m. and p.m. peak hours, due to delays of 67 and 58 seconds, respectively.

The signalized intersection of Oxford Street West and Cherryhill Boulevard is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours, despite the overall v/c of 0.93 in the p.m. peak hour. The southbound left movement is operating with LOS 'E' due to delays of 55 and 71 seconds in the a.m. and p.m. peak hours, respectively. The eastbound left has an LOS 'E' due to delays of 66 seconds in the p.m. peak hour.

The unsignalized intersection of Platt's Lane and Cherryhill Place is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. However, the eastbound left/through/right movement is operating with a LOS of 'F' due to a v/c of 0.90 and delays of 84 seconds.

Overall, all intersections operate within capacity and with minimal delays for most movements.

7.5 Future Total 2026

The traffic capacity analysis results for the intersections in the study area are summarized in **Table 7-5** for weekday a.m. and weekday p.m. peak hours under 2026 future total traffic conditions.

It should be noted that the improvements previously introduced at the intersection of Wonderland Road North and Beaverbrook Avenue were maintained and signal timings were subsequently optimized.

In addition, the northbound lane configuration was updated at the intersection of Oxford Street West and Beaverbrook Avenue, introducing a new "northbound through" lane into the subject lands, shared with the northbound left lane, alongside an exclusive northbound right lane.

All other signal timing plans and improvements were maintained as under future background conditions.

Table 7-5 Future Total 2026 Capacity Analysis

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Wonderland Road at Beaverbrook Avenue	<i>Overall</i>	0.72	22	C	0.76	31	C
	EBL	0.72	60	E	0.97	128	F
	EBT	0.50	49	D	0.48	46	D
	EBT	0.14	44	D	0.12	42	D
	WBL	0.16	45	D	0.40	46	D
	WBT	0.19	45	D	0.75	56	E
	WBR	0.12	44	D	0.54	47	D
	NBL	0.28	11	B	0.69	22	C
	NBT	0.51	17	B	0.67	24	C
	NBR	0.03	12	B	0.04	14	B
	SBL	0.70	16	B	0.68	23	C
	SBT	0.55	14	B	0.66	23	C
	SBR	0.08	9	A	0.23	16	B
Proudfoot Lane at Beaverbrook Avenue (unsignalized)	EBLTR	0.13	8	A	0.28	9	A
	WBLTR	0.03	8	A	0.04	7	A
	NBLTR	0.31	10	A	0.22	9	A
	SBLTR	0.07	8	A	0.05	8	A
Proudfoot Lane at Oxford Street West	<i>Overall</i>	0.78	29	C	0.82	35	C
	EBL	0.23	16	B	0.68	56	E
	EBTR	0.74	24	C	0.56	22	C
	WBL	0.08	13	B	0.07	23	C
	WBT	0.37	17	B	0.72	30	C
	WBR	0.14	42	D	0.50	11	B
	NBL	0.70	67	E	0.93	96	F
	NBT	0.60	57	E	0.86	71	E
	NBR	0.03	49	D	0.03	43	D
	SBL	0.79	45	D	0.93	64	E
	SBTR	0.21	30	C	0.37	30	C
Beaverbrook Avenue at Oxford Street West	<i>Overall</i>	0.67	23	C	0.68	15	B
	EBL	0.01	13	B	0.06	8	A
	EBTR	0.72	27	C	0.56	14	B
	WBL	0.50	18	B	0.56	10	B
	WBTR	0.36	5	A	0.70	10	A

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	NBLT	0.20	55	D	0.41	58	E
	NBR	0.57	62	E	0.12	55	D
	SBL	0.28	48	D	0.22	50	D
	SBT	0.06	47	D	0.03	48	D
	SBR	0.00	0	A	0.00	0	A
Oxford Street West at Cherryhill Boulevard	<i>Overall</i>	<i>0.64</i>	<i>15</i>	<i>B</i>	<i>0.87</i>	<i>26</i>	<i>C</i>
	EBL	0.33	8	A	0.81	57	E
	EBTR	0.63	12	B	0.52	9	A
	WBL	0.15	10	A	0.03	10	B
	WBTR	0.40	10	B	0.88	27	C
	NBL	0.11	50	D	0.19	42	D
	NBTR	0.02	50	D	0.04	40	D
	SBL	0.55	57	E	0.83	68	E
	SBT	0.09	50	D	0.00	40	D
	SBR	0.08	50	D	0.59	48	D
Platt's Lane at Cherryhill Place (unsignalized)	EBLTR	0.56	29	D	0.69	44	E
	WBLTR	0.25	23	C	0.00	0	A
	NBL	0.06	8	A	0.09	9	A
	NBTR	0.18	0	A	0.16	0	A
	SBL	0.01	8	A	0.00	0	A
		0.23	0	A	0.31	0	A
Beaverbrook Avenue at Westfield Drive (unsignalized)	EBLTR	0.08	9	A	0.04	9	A
	WBLTR	0.01	9	A	0.03	10	A
	WBLTR	0.01	6	A	0.03	5	A
	SBLTR	0.00	0	A	0.01	3	A
Street B at Beaverbrook Avenue (unsignalized)	EBTR	0.02	0	A	0.01	0	A
	WBLT	0.00	0	A	0.00	0	A
	NBLR	0.01	9	A	0.01	9	A
Street B at Street A (unsignalized)	WBLR	0.01	9	A	0.03	9	A
	NBLR	0.01	0	A	0.01	0	A
	SBLT	0.00	0	A	0.00	0	A
Street B/Proposed Condo Road at Street A (unsignalized)	EBLTR	0.00	0	A	0.00	0	A
	WBLTR	0.01	3	A	0.01	3	A
	NBLTR	0.03	9	A	0.02	8	A

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	SBLTR	0.02	9	A	0.01	9	A
Street B at Proposed Condo Road (unsignalized)	WBLR	0.00	8	A	0.00	8	A
	NBTR	0.00	0	A	0.00	0	A
	SBLT	0.00	4	A	0.00	5	A

Under 2026 future total conditions, all intersections are operating within capacity, with acceptable Levels of Service and reasonable delays for most movements.

At the signalized intersection of Wonderland Road North and Beaverbrook Avenue, the eastbound left and westbound through movements are operating with LOS 'E' during the weekday a.m. and p.m. peak hours, respectively, due to delays of 60 and 56 seconds. However, the overall v/c and LOS are acceptable during both peak hours. In the p.m. peak hour, the eastbound left is nearing capacity with a v/c of 0.97, delays of 128 seconds and LOS 'F'. The introduction of site traffic has not changed the limitations with this movement from existing future background conditions.

The unsignalized four-way intersection of Beaverbrook Avenue and Proudfoot Lane is operating with LOS 'A', minimal delays, and considerable reserve capacity for all movements. Traffic signal and stop-control warrants were conducted, as detailed in **Section 8**, and an all-way stop control was warranted for this intersection.

The signalized intersection of Proudfoot Lane at Oxford Street West is operating at an overall LOS 'C' during weekday a.m. and p.m. peak hours, with sufficient reserve capacity. The northbound left and northbound through movements are operating with LOS 'E' in the a.m. peak hours, due to delays of 67 and 57 seconds. In the p.m. peak hour, the eastbound left, northbound through and southbound left all have LOS of 'E' due to delays between 56 and 71 seconds. Notably, the northbound left continues to approach capacity with a v/c of 0.93, delays of 93 seconds and LOS 'F' in the p.m. peak hour, however, this growth is attributed to background corridor growth unrelated to the subject site.

The signalized intersection of Beaverbrook Avenue and Oxford Street West is operating at an overall LOS 'C' and 'B' during weekday a.m. and p.m. peak hours, respectively, with minimal delays and sufficient reserve capacity. In the a.m., the northbound right has an LOS 'E' due to delays of 62 seconds, attributed to the intersection's cycle length. In the p.m. peak hour, the new northbound through/left operates with an LOS 'E' due to delays of 58 seconds, attributed to the cycle length.

The signalized intersection of Oxford Street West and Cherryhill Boulevard is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. The southbound left movement is operating with LOS 'E' due to delays of 57 and 68 seconds in the a.m. and p.m. peak hours, respectively. The eastbound left turn is operating with an LOS 'E' due to delays of 57 seconds due to heavy westbound through volumes related to background growth.

The unsignalized intersection of Platt's Lane and Cherryhill Place is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. However, the eastbound left/through/right movement is operating with a v/c of 0.69 and delays of 44 seconds resulting in an LOS 'E'. This is a marked improvement from future background conditions, due to improved optimization.

All unsignalized internal stop-controlled intersections are operating with LOS 'A' for all movements, minimal delay, and considerable reserve capacity.

Overall, all intersections operate within capacity and with minimal delays for most movements under 2026 future total conditions.

7.6 Future Total 2035

The traffic capacity analysis results for the intersections in the study area are summarized in **Table 7-6** for weekday a.m. and weekday p.m. peak hours under 2035 future total traffic conditions.

It should be noted that the cycle length for the intersection of Wonderland Road North and Beaverbrook Avenue was increased to 145 seconds in the p.m. peak hour, from 140 seconds in the Future Total 2026 scenario. All other intersection improvements are maintained from Future Background 2035.

In addition, the updated northbound lane configuration for the intersection of Oxford Street West and Beaverbrook Avenue is maintained from the Future Total 2026 scenario.

Finally, the southbound through lane has been converted into a southbound through/left at the intersection of Oxford Street West and Cherryhill Boulevard. Signal timings have been split for northbound and southbound movements and all signal timings were subsequently optimized.

All other signal timing plans and improvements were maintained as under future background conditions.

Table 7-6 Future Total 2035 Capacity Analysis

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
Wonderland Road at Beaverbrook Avenue	<i>Overall</i>	<i>0.87</i>	<i>33</i>	<i>C</i>	<i>1.03</i>	<i>58</i>	<i>E</i>
	EBL	0.81	67	E	0.98	125	F
	EBT	0.57	47	D	0.54	46	D
	EBT	0.24	42	D	0.13	40	D
	WBL	0.21	49	D	0.43	51	D
	WBT	0.41	51	D	0.90	79	E
	WBR	0.15	48	D	0.76	64	E
	NBL	0.47	20	B	0.99	104	F
	NBT	0.78	34	C	0.89	45	D
	NBR	0.03	19	B	0.05	23	C
	SBL	0.83	48	D	0.95	88	F
	SBT	0.71	21	C	1.00	60	E
	SBR	0.10	12	B	0.38	25	C
Proudfoot Lane at Beaverbrook Avenue	EBLTR	0.20	9	A	0.42	10	B
	WBLTR	0.09	9	A	0.05	8	A
	NBLTR	0.41	11	B	0.33	10	B
	SBLTR	0.07	8	A	0.04	8	A
Proudfoot Lane at Oxford Street West	<i>Overall</i>	<i>1.02</i>	<i>40</i>	<i>D</i>	<i>1.00</i>	<i>42</i>	<i>D</i>
	EBL	0.38	16	B	0.68	45	D
	EBTR	0.89	31	C	0.66	26	C
	WBL	0.45	52	D	0.18	24	C
	WBT	0.54	27	C	0.98	47	D

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	WBR	0.18	2	A	0.61	4	A
	NBL	0.49	45	D	0.55	39	D
	NBT	0.71	62	E	0.96	90	F
	NBR	0.04	48	D	0.03	43	D
	SBL	1.10	115	F	0.99	85	F
	SBTR	0.42	43	D	0.58	43	D
Beaverbrook Avenue at Oxford Street West	<i>Overall</i>	0.98	26	C	0.87	20	B
	EBL	0.06	10	A	0.54	34	C
	EBTR	0.94	18	B	0.68	14	B
	WBL	0.97	154	F	0.71	29	C
	WBTR	0.48	7	A	0.86	15	B
	NBLT	0.22	50	D	0.65	63	E
	NBR	0.77	69	E	0.13	52	D
	SBL	0.81	65	E	0.64	56	E
	SBT	0.20	42	D	0.10	44	D
	SBR	0.03	40	D	0.02	43	D
Oxford Street West at Cherryhill Boulevard	<i>Overall</i>	0.82	14	B	0.96	38	D
	EBL	0.50	8	A	0.90	103	F
	EBTR	0.83	8	A	0.60	4	A
	WBL	0.41	28	C	0.04	10	B
	WBTR	0.52	13	B	1.01	47	D
	NBL	0.43	69	E	0.65	81	F
	NBTR	0.10	63	E	0.14	61	E
	SBL	0.55	60	E	0.69	66	E
	SBT	0.53	59	E	0.69	66	E
	SBR	0.08	46	D	0.86	73	E
Platt's Lane at Cherryhill Place (unsignalized)	EBLTR	1.04	107	F	1.34	234	F
	WBLTR	0.41	39	E	0.27	40	E
	NBL	0.08	9	A	0.14	10	A
	NBTR	0.21	0	A	0.20	0	A
	SBL	0.01	8	A	0.01	9	A
	SBTR	0.27	0	A	0.37	0	A
Beaverbrook Avenue at Westfield Drive (unsignalized)	EBLTR	0.06	9	A	0.04	9	A
	WBLTR	0.05	10	B	0.05	10	A

Scenario	Movement of Interest	Weekday AM Peak Hour			Weekday PM Peak Hour		
		v/c	Delay (s)	LOS	v/c	Delay (s)	LOS
	WBLTR	0.01	2	A	0.00	1	A
	SBLTR	0.02	4	A	0.01	4	A
Street B at Beaverbrook Avenue (unsignalized)	EBTR	0.05	0	A	0.04	0	A
	WBLT	0.00	0	A	0.00	0	A
	NBLR	0.02	9	A	0.01	9	A
Street B at Street A (unsignalized)	WBLR	0.00	9	A	0.01	9	A
	NBLR	0.01	0	A	0.01	0	A
	SBLT	0.00	0	A	0.00	0	A
Street B/Proposed Condo Road at Street A (unsignalized)	EBLTR	0.00	0	A	0.00	0	A
	WBLTR	0.00	4	A	0.02	6	A
	NBLTR	0.03	9	A	0.02	8	A
	SBLTR	0.01	9	A	0.01	9	A
Street B at Proposed Condo Road (unsignalized)	WBLR	0.01	8	A	0.00	8	A
	NBTR	0.00	0	A	0.00	0	A
	SBLT	0.00	2	A	0.01	4	A

Under 2035 future total conditions, most intersections are operating within capacity, with acceptable Levels of Service and reasonable delays for most movements.

The signalized intersection of Wonderland Road North and Beaverbrook Avenue is operating with an overall v/c of 1.03 and LOS 'E' in the p.m. peak hour, due to several movements approaching capacity and operating with LOS of 'E' or 'F'. Notably, the northbound left is operating with a v/c of 0.99 and LOS 'F', the southbound left at a v/c of 0.95 and LOS 'F', and the southbound through at a v/c of 1.00 and LOS 'E'. These movements continue to be limited due to the compounded corridor growth over 15 years and are not impacted by the introduction of site traffic, as demonstrated in future background conditions.

The unsignalized four-way intersection of Beaverbrook Avenue and Proudfoot Lane is operating with LOS 'A', minimal delays, and considerable reserve capacity for all movements. Traffic signal and stop-control warrants were conducted, as detailed in **Section 8**, and an all-way stop control was warranted for this intersection.

The signalized intersection of Proudfoot Lane at Oxford Street West is operating at an overall LOS 'D' during weekday a.m. and p.m. peak hours, due to v/c of 1.02 and 1.00, respectively. In the a.m. peak hour, this is due to the southbound left operating with a v/c of 1.10 and LOS 'F' due to delays of 115 seconds. In the p.m. peak hour, the northbound through and southbound left are operating with v/c of 0.96 and 0.99, respectively, with LOS 'F' and delays of 90 and 85 seconds. These movements continue to be limited due to the compounded corridor growth over 15 years and are not impacted by the introduction of site traffic, as demonstrated in future background conditions. All other movements are operating with sufficient reserve capacity and minimal delays.

The signalized intersection of Beaverbrook Avenue and Oxford Street West is operating at an overall LOS 'C' and 'B' during weekday a.m. and p.m. peak hours, respectively, with minimal delays and sufficient reserve capacity. In the a.m. peak hour, the overall v/c of 0.98 is triggered by the westbound left movement's v/c of 0.97 and LOS 'F' due to delays of 154 seconds. Signal coordination along Oxford Street West, leading to better platooning of vehicles travelling eastbound and westbound, may help manage delays along the corridor

and improve the flow of left turning vehicles. Other movements such as the northbound through/left, northbound right, southbound left and eastbound through/right are operating with LOS 'E' similarly due to challenges crossing with large east-west through volumes resulting from 15 years of background corridor growth.

The signalized intersection of Oxford Street West and Cherryhill Boulevard is generally operating with some delay, acceptable LOS, and sufficient reserve capacity during both peak hours. In the p.m. peak hour, the overall v/c of 0.96 and LOS 'D' is triggered by the eastbound left operating with a v/c of 0.90 and LOS 'F' due to turning delays of 103 seconds, and a westbound through/right operating with a v/c of 1.01 and delays of 47 seconds. Northbound and southbound movements are operating with LOS 'E' and 'F' in both peak hours due to existing cycle length limitations and splits geared towards east-west movements to accommodate background corridor growth.

The unsignalized intersection of Platt's Lane and Cherryhill Place is generally operating with minimal delay, acceptable LOS, and sufficient reserve capacity during both peak hours. However, the eastbound left/through/right movement is operating with v/c of 1.04 and 1.34, with delays of 107 and 234 seconds in the a.m. and p.m. peak hours, respectively, resulting in an LOS 'F', primarily caused by background corridor growth. It is understood that growth along this street would be caused by the proposed development, rather than added on top of the same, during the study horizon. The application of compounded growth of 0.5% on Cherryhill Place across the 15-year period of this study, despite the closed geography of the street should be reconsidered by the City.

All unsignalized internal stop-controlled intersections are operating with LOS 'A' or LOS 'B' for all movements, minimal delay, and considerable reserve capacity.

Overall, all intersections operate within capacity and with minimal delays for most movements under 2035 future total conditions.

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8 TRAFFIC WARRANT SUMMARY

To identify the geometry/improvements required for the internal and some external intersections both all-way stop control (AWSC) warrants and signal were completed for some external and internal intersections according to the procedures in the Ontario Traffic Manual. A summary of the analysis has been provided in **Appendix G**.

The unsignalized intersections of Beaverbrook Avenue and Oxford Street West and Beaverbrook Avenue and Proudfoot Lane were evaluated to confirm justification for traffic signal installation. A traffic signal warrant was completed based on the guidelines provided in OTM *Book 12 Traffic Signals*.

The resulting analysis confirmed that the intersection of Beaverbrook Avenue and Oxford Street West did not satisfy the OTM signal warrants in the future background 2026, 2035 or future total 2026 future traffic conditions; the warrant was satisfied in the future total 2035 traffic condition. However, **it is recommended to signalize this intersection by 2026, to effectively serve the significant background corridor growth forecasted**, unrelated and prior to the addition of site-generated traffic by the 2026 interim future conditions. As such, this intersection was modelled as a signalized intersection in all future background and future total conditions. TMIG recommends the City to consider monitoring and implementing signals at Beaverbrook Avenue and Oxford Street West to mitigate delays by 2026 and manage traffic by 2035.

The intersection of Beaverbrook Avenue and Proudfoot Lane did not satisfy the OTM signal warrants under any of the traffic conditions. Additionally, capacity analysis results (see **Section 7**) show that a signal is not required at this intersection to mitigate traffic delays.

The following unsignalized intersections were evaluated to confirm justification for all-way stop controls. As Beaverbrook Avenue and Proudfoot Lane did not warrant a traffic signal. An AWSC was also conducted for this intersection. AWSC warrants were completed based on the guidelines provided in OTM *Book 5 Regulatory Signs*.

- Beaverbrook Avenue & Westfield Drive / Street A
- Beaverbrook Avenue & Street B
- Street A & Street B
- Street A & Street B / Proposed Condo Road
- Street B & Proposed Condo Road
- Beaverbrook Avenue and Proudfoot Lane

The resulting analysis confirmed that none of the proposed internal intersections satisfied the AWSC warrant, and is not recommended to mitigate and traffic delay or capacity issues, as seen in **Section 7**.

Beaverbrook Avenue and Proudfoot Lane satisfied the AWSC warrant under future total 2026 conditions, and therefore was modelled as an all-way stop controlled intersection for future total 2026 and 2035 traffic analysis.

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9 TRANSPORTATION DEMAND MANAGEMENT

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

- Reduced auto-related emissions to improve air quality
- Decreased traffic congestion to reduce travel time
- Increased travel options for residents and commuters
- Reduced personal transportation costs and energy consumptions

The combined benefits listed above will assist in creating a more active and liveable community through improvements to overall active transportation facilities for the residents, businesses, and the surrounding community.

Typical TDM measures include:

- Carpool/vanpool ride sharing, with emergency ride home.
- High-occupancy vehicle (HOV) lanes in existing rights-of-way for bus, taxis, and cars with three or more occupants.
- Bicycle and pedestrian programs.
- Promotion of public transit.
- Parking supply and management strategies.
- Use of “smart card” technology and other advances in the pricing and marketing of transportation services.
- Establishment of Transportation Management Associations (TMA’s) in employment areas and car sharing organizations in residential areas.
- Programs to promote flexible working hours and telecommuting.
- Application of incident management system and Intelligent Transportation Systems (ITS) innovations.

Development of site-specific Transportation Demand Management (TDM) measures for the proposed site is based on a five-year planning horizon from the date of this study to the first phase opening day (2021-2026). It is anticipated that existing TDM measures may be refined and further detailed closer to the full-build-out of the subject site in 2035, during the Site Plan Application stage of development. Therefore, in the context that the primary objective is to reduce single occupancy vehicle use from Day 1 of residential occupation, the TDM plan will review opportunities to set realistic targets for increased use of carpooling, transit, cycling, and walking trips.

This section will focus on:

- Identification of site related TDM measures that address City of London objectives; and
- TDM program implementation, as well as on-going evaluation and monitoring approach.

Due to the inherent overlap between TDM and Active Transportation measures, **the Active Transportation Plan has been included as a component of this Transportation Demand Management Plan** and is detailed in **Section 9.2.1**.

9.1 Objectives

City of London 2030 Transportation Master Plan: SmartMoves (May 2013)

The City of London's Transportation Master Plan (2013) promotes the benefits of Active Transportation and Transportation Demand Management (TDM) measures as part of a strategy to transform travel in the city to balance economic, social, and environmental needs to accommodate growth and enhance mobility. The TMP recognizes that active transportation is closely linked to TDM, through "a range of policies, programs, and mobility services that influence whether, why, when, where and how people travel" and measures can include: **Education and Outreach; Incentives and Disincentives; Transportation Supply; and Supportive Land Use Policies.** Accordingly, the TMP includes 21 specific initiatives, broadly covered by 7 policy directions for focussing active transportation and TDM efforts, as follows:

1. Strengthen Policy Support
2. Promote Sustainable Travel for All Time Periods
3. Target Commuter Travel
4. Target School Travel
5. Increase Investment in Active Transportation Infrastructure
6. Finalize Downtown Parking Strategy
7. Use Parking to Support Transit, Active Transportation, and Transportation Demand Management.

The TMP recognizes that improved active transportation also improves accessibility to employment and education opportunities, medical care, and other key amenities for disenfranchised groups without access to a car. This serves to reduce social isolation, while also promoting a sense of community and neighbourhood vitality.

The Draft Plan of Subdivision for the Beaverbrook lands strives to achieve this vision with a transportation system which supports a range of modes to enhance sustainability and integrate land use and transportation planning. The subject land' proximity to a future Oxford Street rapid transit boulevard, and an abundance of active transportation linkages will help the development achieve the city's target mode share of 15% for active transportation by 2030.

The inclusion of the TDM strategies outlined in this section will help achieve several of the Transportation Master Plan's principles and goals, including to:

- Make it easier to get around London through a menu of options.
- Develop a pedestrian and bicycle friendly neighbourhood.
- Integrate land use and transportation planning to encourage more sustainable lifestyles.
- Preserve and enhance environmental resources.
- Minimize the use of fossil fuels, and
- Foster awareness of sustainable transportation.

The London Plan, 2020

The sustainable principles and goals of the Transportation Master Plan are further enhanced and detailed in the City's Official Plan: The London Plan (Consolidated October 23, 2020). Among others, Section 5: City Building Policies states that:

364: *Improvements to the mobility network will be planned with an emphasis on active mobility, improved transit services, and Transportation Demand Management (TDM) targets.*

9.2 TDM Opportunities Identification

The TDM approach proposes a mix of hard and soft measures to meet the objectives and targets to reduce vehicular travel demand and encourage passenger, transit, cycling, and walking. Details are proposed and reviewed with each of the following TDM opportunities.

9.2.1 Active Transportation Network Plan

A robust Active Transportation Plan is fundamental to the success of the overall TDM strategy. Section 5.5 of the Urban Design Guidelines presents a detailed Active Transportation Diagram for reference. The following sections illustrate the network of pedestrian and cycling systems throughout the subject lands, including connections to external active transportations linkages (such as the planned pedestrian rail crossing) and transit facilities. Recommendations are provided for future development features and mitigation measures to protect vulnerable road users and enhance safety of all road users.

9.2.1.1 Sidewalk Connectivity

The Draft Plan of Subdivision includes the provision of sidewalks on all local and collector roads through the subject lands. All neighbourhood streets, including Street A, Street B, and Westfield Drive, are designed with a 20-metre right-of-way with sidewalks on both sides of the road, as illustrated in **Figure 9-1**. Beaverbrook Avenue will be extended through the subject lands with a 23-metre right-of-way and sidewalks on both sides of the road, as illustrated in **Figure 9-2**.

Figure 9-1 Urban Design Street Section: All Neighbourhood Streets

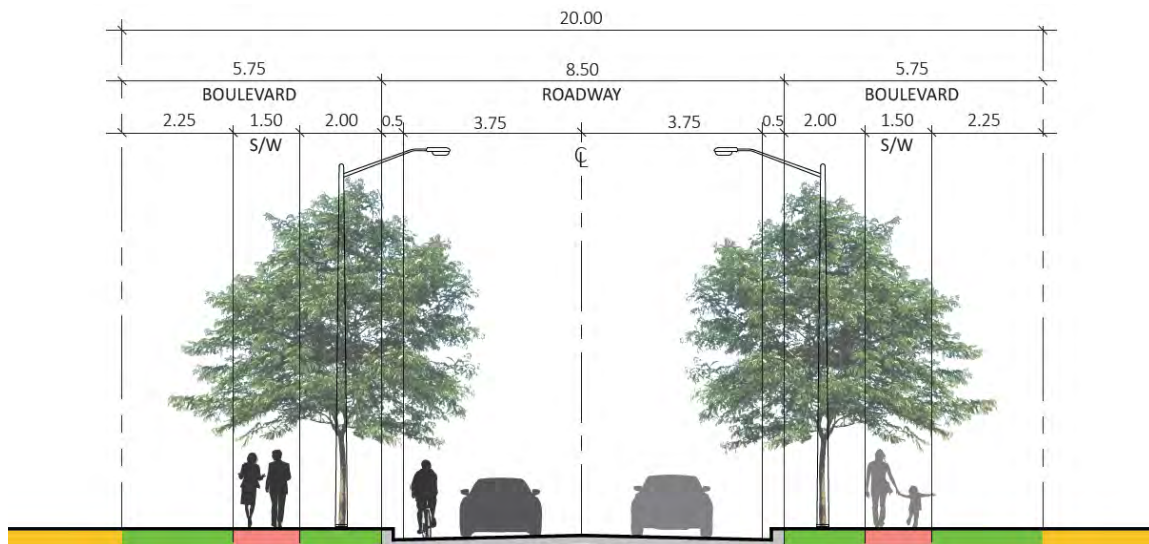
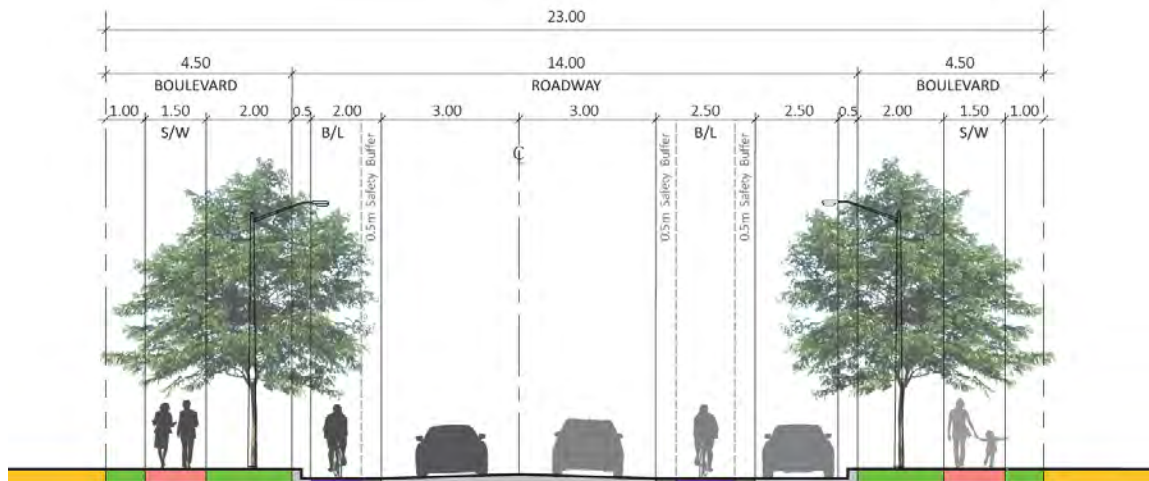
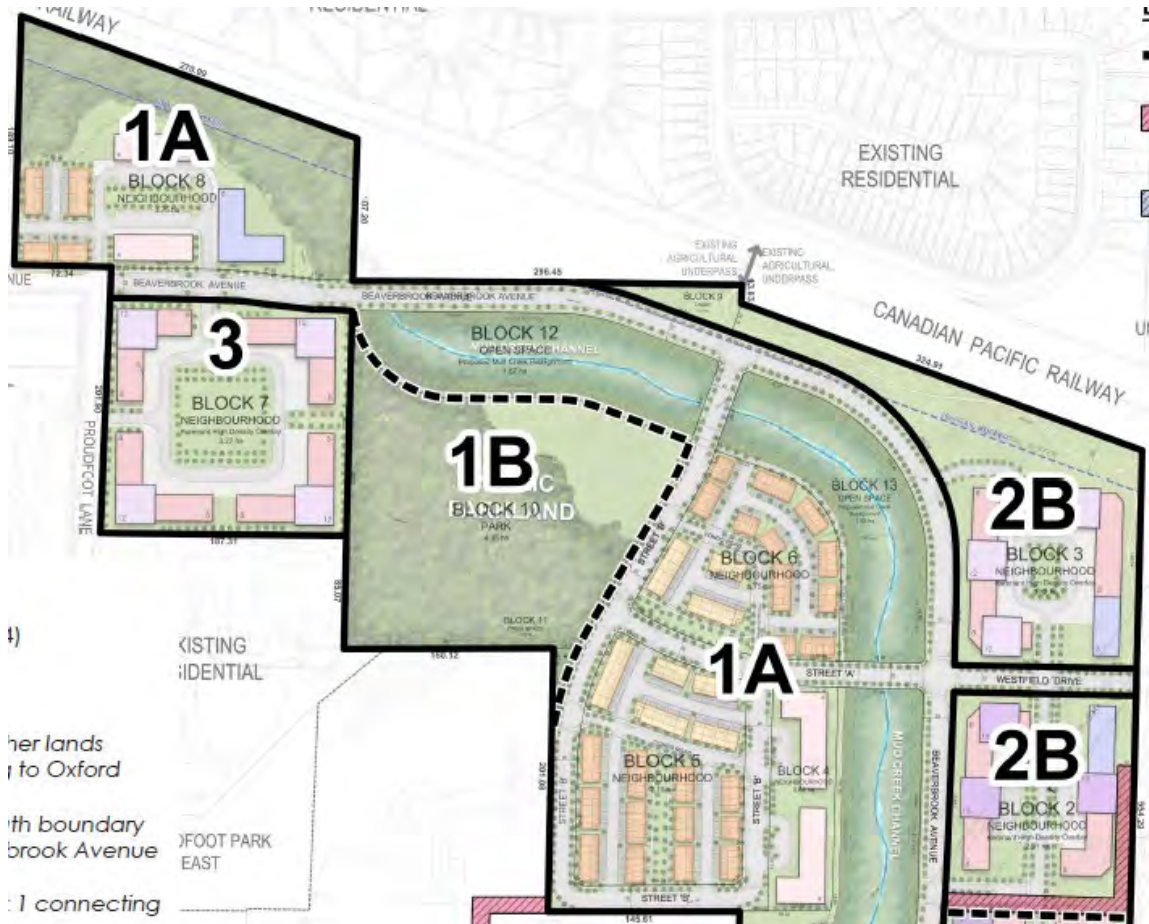


Figure 9-2 Urban Design Street Section: Beaverbrook Avenue (Neighbourhood Connector)



In addition, pedestrian connectivity will be enhanced by a future active transportation link over the Canadian Pacific Railway corridor along the north boundary of the site. As illustrated in **Figure 9-3**, pedestrians will not be restricted northly by the railway and will have convenient access to the city’s active transportation network in all directions from the subject lands. **Figure 9-3** illustrates the location of the proposed link, at the location of an existing agricultural underpass, which will be detailed at a later stage.

Figure 9-3 Pedestrian Connection over Rail Corridor (MBTW-WAI Demonstration Plan Excerpt)



9.2.1.2 Cycling Network

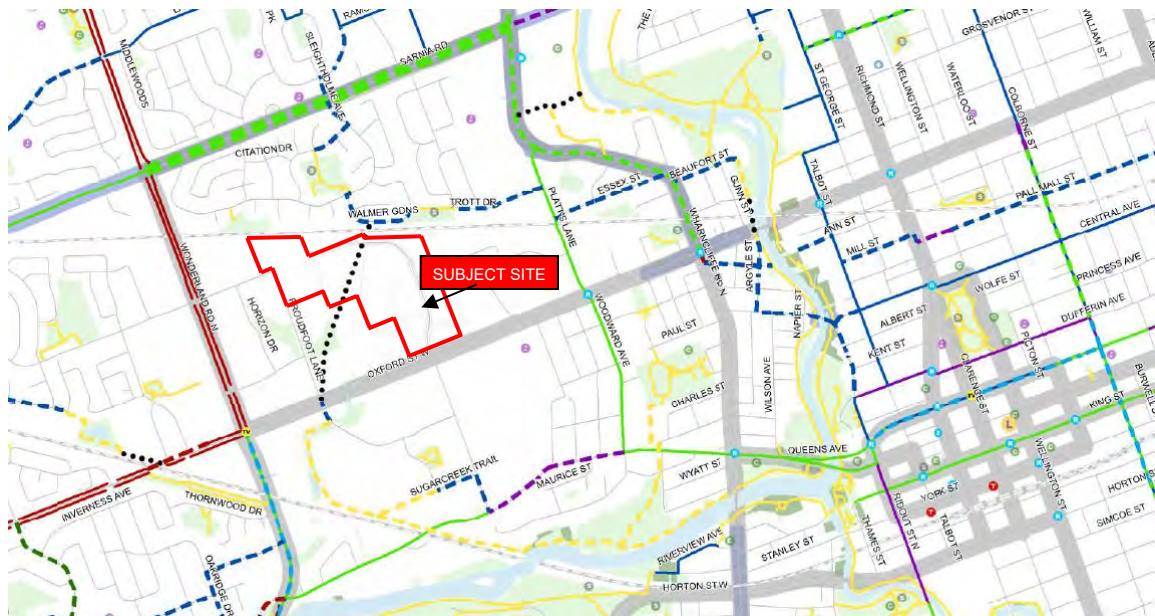
The City of London’s 2016 Cycling Master Plan develops opportunities to improve the active transportation environment through expanded bike lanes and cycling infrastructure connections to Priority On-Street Bike Routes (illustrated in **Figure 4-1**), furthering the network outlined in the Transportation Master Plan.

As illustrated in **Figure 9-4**, there is an existing in-boulevard facility along Wonderland Road North, north of Oxford Street West, and a bike lane along Platt’s Lane, representing north-south connections on either side of the subject site. The proposed network would include new bike lanes on Sarnia Road, signed bike routes on residential streets north of the rail corridor and along Riverside Drive to the south to connect gaps between existing bike lanes.

Notably, the proposed cycling network illustrates a “Desired Connection” from Oxford Street West to the residential community on the north side of the Canadian Pacific Railway corridor, through the subject lands. The proposed development will enable this connection via proposed dedicated cycling lanes along the Beaverbrook Avenue extension, on both sides of the road, connecting to local routes and the crossing over the rail corridor to link the north and south sides of the community. In addition, the active transportation plan includes shared cycle lanes on all other Neighbourhood Streets.

Figure 9-2 illustrates the urban design street section for Beaverbrook Avenue, including bike lanes in each direction to connect cyclists to and from Oxford Street West.

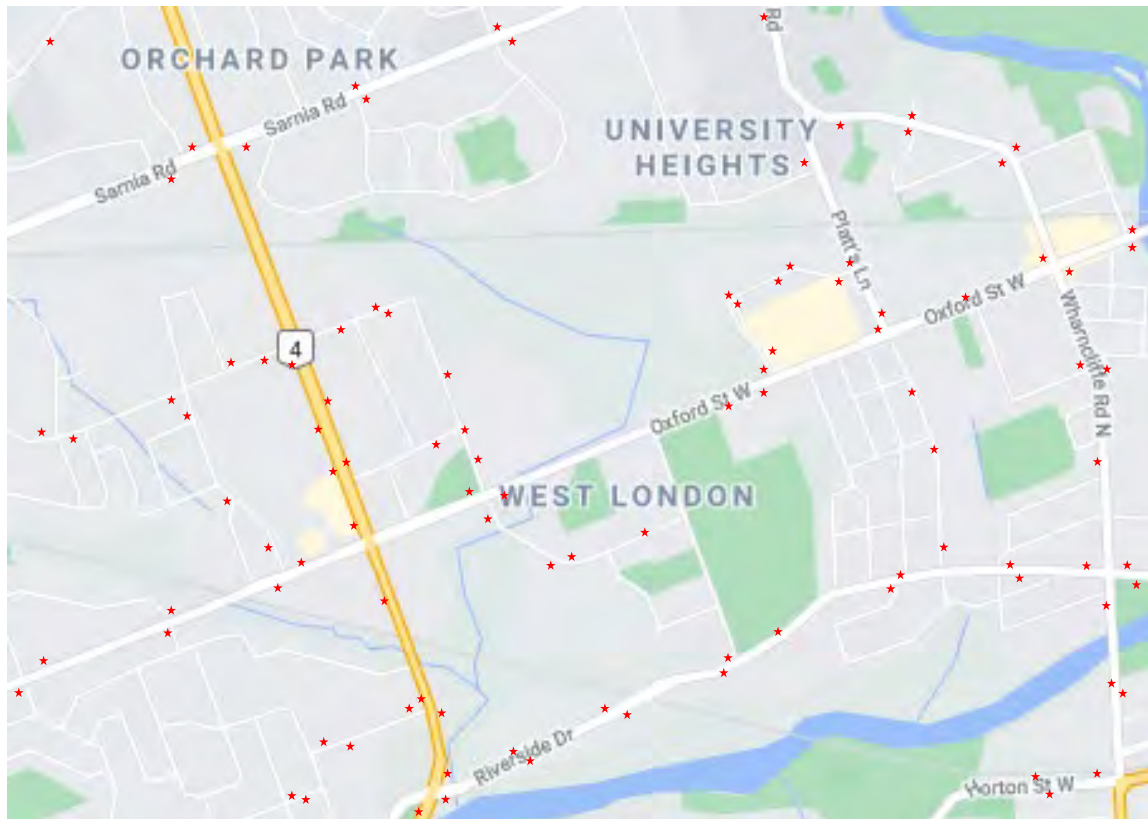
Figure 9-4 City of London Cycling Master Plan (2016) – Future Network



9.2.1.3 Existing Bus Stop Locations

As detailed in **Section 3.2**, the study area is well-served by London Transit, with routes connecting around the subject site to all corners and destinations of the City. The proposed active transportation network within the Draft Plan of subdivision will connect future residents to this network and the abundance of transit stops surrounding the site, as illustrated in **Figure 9-5**.

Figure 9-5 Existing Bus Stop Locations



It is recommended that the City examine the expansion of bus service through the subject lands along Beaverbrook Avenue at the time of development during both 2026 and 2035 build-out horizons, with future bus stops serving future residents at the same level of convenience observed in Cherryhill Village to the east.

9.2.1.4 Connectivity to Arterials

The City of London's Transportation Master Plan, Cycling Master Plan, and Pedestrian Walk Maps propose active transportation network improvements along the boundary road network, improving connections in and around the study area. The City's emphasis on a well-connected cycling system demonstrates its commitment to building and supporting healthy and active communities. **Figure 9-4** shows the local cycling network, with dashed lines representing future routes and connections. The black dashed line represents desired connections, which the Draft Plan delivers.

Overall, cyclists and pedestrians are well connected in the study area through an expansive sidewalk system and growing cycling network across the City. The sidewalks planned throughout the proposed development will ensure pedestrians have safe access south to Oxford Street West, east to Platt's Lane via Westfield Drive, west to Proudfoot Lane and Wonderland Road, and north across the rail corridor to Sarnia Road. The proposed bike lanes on Beaverbrook Avenue will connect cyclists through the community, with opportunities to connect to the city-wide network via Wonderland Road or Platt's Lane.

Considering the layered active transportation network planned for the subject lands, **we recommend that the City examine solutions to close gaps in the network between the subject site and the surrounding network.** Specifically, we recommend the expansion of bike lanes along Oxford Street West, from Wonderland Road North to Platt's Lane or further east to Wharcliffe Road North or Richmond Street, to connect cyclists quickly and reliably from the development to the City's downtown. We also recommend expanding cycling infrastructure along Beaverbrook Avenue from Wonderland Road to Proudfoot Lane, and south of Oxford Street West to Riverside Drive to further develop seamless connections to and from the city's cycling network.

With such investments in closing network gaps between facilities within the subject lands and the city-wide network, residents can be encouraged to commute using active transportation alternatives to reduce the demand for single occupancy vehicle travel to and from the proposed development.

9.2.1.5 Road Safety

Road safety impacts all members of the community, regardless of their ability, age, or mode of transportation. The implementation of the proposed active transportation plan, with sidewalks set back from the roadway, clearly marked bike lanes, safe pedestrian connections over the rail corridor, and a well-connected grid will help ensure adequate protection is available for the vulnerable, while maintaining connections for all vehicular and active road users. Elements such as the curving Beaverbrook Avenue road alignment will help reduce vehicle speeds within the constrained right-of-way, helping enhance safety while supporting the alignment of the Mud Creek channel.

It is understood that specific roadway designs for each block will be detailed during the Site Plan Application Stage of development, it is recommended that additional measures be considered to enhance road safety in a multi-disciplinary and integrated way. Holistic road safety measures such as education campaigns, enforcement strategies, and high-level infrastructure modifications will help improve safety throughout the community. While elements such as enforcement are municipal responsibilities and may be implemented to further the City of London's Vision Zero Road Safety Strategy for calmer and safer streets, the developer should consider infrastructure modifications including but not limited to the following, to enhance safety within each block of the development during detailed design:

- Reduced curb radii, to slow turning vehicles and improve safety for crossing pedestrians and cyclists.
- Curb bump outs, specifically on either side of on-street parking bays.
- Grade separated bike infrastructure may be considered to improve cyclist safety and reduce conflict points with vehicles.
- Pedestrian-oriented lighting to help improve wayfinding and accessibility at all hours of the day.
- Lower speed limits on residential streets, in alignment with the City's Area Speed Limits program.

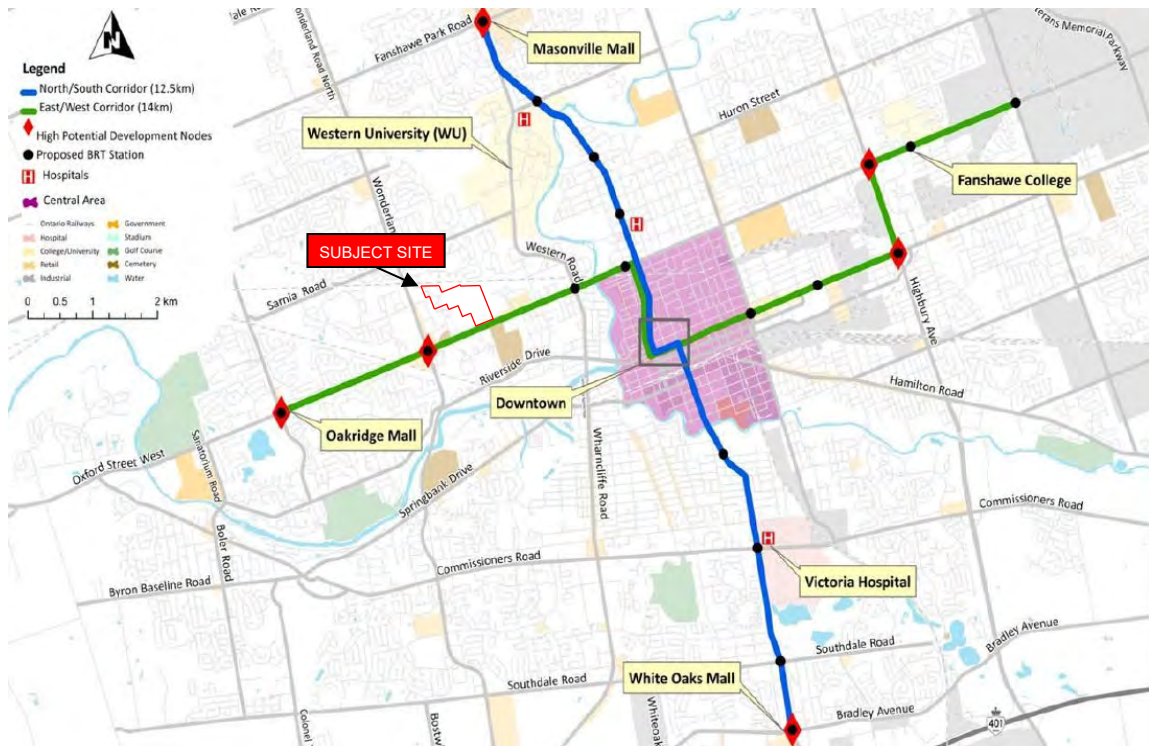
As stated, these enhancements may be considered and developed during the Site Plan Application stage for each block within the proposed Draft Plan of Subdivision for the Beaverbrook lands.

9.2.2 Transit Network Expansion

The City of London's 2030 Transportation Master Plan: SmartMoves (May 2013) identified Oxford Street West as a central east-west Bus Rapid Transit (BRT) Corridor. The road was planned to be widened from 4 to 6 lanes to accommodate the future BRT, which would have stopped at the intersection of Oxford Street West and Beaverbrook Avenue, serving the proposed development. The site's location along on a high frequency corridor (with or without a BRT), ensures residents have direct access to local transit serving all major destinations in the City.

Figure 9-6 shows the recommended Bus Rapid Transit (BRT) Network, as per the City's 2013 TMP, showing the study area's context within the City's transit network. While the development of rapid transit is currently on hold, planning may resume in the future and provide enhanced transit connectivity from the subject site.

Figure 9-6 Recommended Bus Rapid Transit (BRT) Network (TMP, 2013)



Overall, with effective future investments in accessible local and regional transit underway, there are numerous opportunities for future residents to connect to local and regional frequent and reliable transit from the proposed development.

9.2.3 Rideshare Services

With the growth of ride hailing services like Uber, Lyft and other emerging competitors, residents will have flexible alternatives to transit, cycling and driving for short, local trips. For future residents who may not own or have access to a car, rideshare services may be used to reach a local transit station, work, or needed services. This is also an option for those who may not be able to participate in active transportation options and require a door-to-door service, at potentially lower costs than a traditional taxi service.

The premium price to reach city-wide destinations may not be a practical option for residents on a regular basis. Future changes in demand, supply of vehicles, time of day and distance would certainly impact the cost factor. Currently the supply of vehicles is greatly reduced, and prices raised, in response to the effected rideshare market due to the COVID-19 pandemic and associated lockdowns.

Alternatively, Regional Rideshare is a free public service that matches potential carpools. It is available to all Londoners and anyone who regularly commutes to and from London from surrounding communities. Regional Rideshare services are currently on hold due to the Covid-19 pandemic but are anticipated to be fully operational at the time of development.

9.2.4 Car Sharing Services

Car sharing enables residents to rent cars for a short period of time providing occasional access to a vehicle for out-of-town trips, special occasions, or other circumstances. Car share services are an ideal solution for future residents who opt to walk, bike, and use public transit for their regular transportation needs. Future residents may opt in for a car sharing service, opening access to a fleet of vehicles on an hourly basis, by paying for a **Communauto** (formerly Vrtucar) membership, which is the primary service currently operating in the City of London.

9.2.5 Microtransit

An option which future patrons may benefit from is a growing middle-tier form of movement, between private cars and public transportation, namely *microtransit*. Flexible local transit services have been growing in suburban and urban communities from San Francisco to New York, and this informal rideshare network could transform the City of London by the expected future build out of this subject site. Some GTA municipalities, such as Toronto and Mississauga, are experimenting and studying the benefits of e-scooter, e-bike, and bike-share alternatives to local transportation needs, and the Province of Ontario currently supports pilot programs in municipalities for the next five years.

Future microtransit providers may become feeders to public transit core routes, addressing accessibility challenges for some residents, while reducing the burden on the City for custom local routes and supporting the trending car-free lifestyle of younger generations. While a newer, niche service, microtransit may be a viable TDM measure for the future development.

9.3 TDM Measures for Implementation

The availability of high frequency transit, reliable network connections, rideshare and carpool alternatives, the expansion of active transportation facilities and the flexibility to adapt to future transportation services supports the City's goal for an integrated transportation network. While these provisions are largely subject to the City's decision making and funding allocations, the proposed development has the opportunity to support a strong TDM strategy through infrastructure and promotion.

9.3.1 Active Transportation Infrastructure

The proposed development's pedestrian and cycling facilities are an overlooked infrastructure enhancement, supporting active transportation choices and connections to the proximate bus stops and destinations around the City. These routes should be well lit and signed to enable mobility at all hours and support wayfinding around the community and in all directions to the surrounding neighbourhood.

During the Site Plan Application stage, the developer should consider providing additional bicycle parking spaces in the proposed higher-density blocks to enable and encourage residents living in apartments to cycle instead of drive. Such investments will support current and future TDM objectives and strategies to reduce the reliance on private vehicular travel and promote shifts to active transportation and transit travel modes.

9.3.2 Information Package

The TDM opportunities outlined in this section would all benefit from an additional measure of preparing a customized commuter options brochure for future residents, to support the promotion of TDM options in and around the proposed development.

This TDM Information Package, enclosed in **Appendix H**, provides details on Transit, Walking, and Cycling alternatives to aid future residents in making sustainable travel choices. The package includes the City of London's 2020 Walk Map, Bike Map, and the 2019 London Transit map.

People who cycle for recreational purposes are good groups to target as potential commuter cyclists. They have access to a bicycle and may already be familiar with the City's network of cycling and trail facilities. Many residents, however, may have simply never tried cycling and could be unfamiliar with appropriate routes, techniques, and advice for commuting to work / school by bike. This could be supported through community education programs led by the City and supported by community groups.

Short-distance commuters could be targeted with messages focusing on the convenience, cost and health benefits of walking or cycling to work. In addition, practical advice regarding route selection, bike parking, and remaining active in cold or wet weather would be useful and effective. This information could be provided to residents during regular communications throughout the year by the City.

Elderly residents as well as people with physical limitations may be prevented from getting to their destination on their own. In these instances, carpooling, car-share, and shuttle services are important transportation options. The marketing of these opportunities and availability of the services should be provided in further detail to better inform these individuals.

9.4 TDM Monitoring and Measures of Success

Baseline Commuter Survey

The City of London should conduct a confidential transportation survey amongst all residents in the proposed development, once in 2026 and again in 2035, coinciding with each block's opening day. The comprehensive survey will provide a measure of current commuter traffic patterns, modes of transportation, behaviours, and perceptions for the area.

Results will also assist in identifying the demand for sustainable transportation options and opportunities to provide better site access and reduce auto trips (such as a neighbourhood initiated car-pooling program).

Follow-Up Commuter Survey

The City of London should conduct a follow-up TDM survey two years after each baseline commuter survey. Results will identify areas of success and improvement for sustainable options for the development and surrounding area. A revised work plan could be developed with strategies to improve sustainable transportation that meet the needs of residents of all ages.

10 CONCLUSIONS AND RECOMMENDATIONS

Following the traffic analysis completed in this report, TMIG provides the following summary and recommendations.

In consideration of the possibility for bonus density of 25% on certain blocks, if fully applied for and permitted, this study analyzes the maximum total unit count of 3,462 residential units, including possible bonus zoning, for a conservative assessment of future traffic conditions.

The proposed residential development, with the possible 25% bonus density, is expected to generate a total of 175 two-way vehicle trips during the a.m. peak hour by 2026 (Phase 1), consisting of 45 inbound trips and 130 outbound trips. During the p.m. peak hour, it is expected to generate 214 two-way vehicle trips consisting of 131 inbound trips and 83 outbound trips. In 2035, the full build-out of the draft plan is expected to generate a total of 718 two-way vehicle trips during the a.m. peak hour, consisting of 176 inbound trips and 542 outbound trips. During the p.m. peak hour, it is expected to generate 843 two-way vehicle trips consisting of 514 inbound trips and 329 outbound trips.

Under baseline 2021, and future 2026, and 2035 traffic conditions, the study area intersections are expected to predominantly operate with good operational characteristics and sufficient reserve capacity during both weekday a.m. and p.m. peak hours with no significant issues brought about by the proposed development to report. Any poor LOS or delay for select turning movements under future conditions is a result of poor operations under existing conditions or extensive background corridor growth, as detailed within the study. All internal intersections within the subdivision are also anticipated to operate with good functionality and acceptable levels of service (LOS) and v/c ratios.

As there are negligible differences between the future background and future total capacity results, the intersections operating at or over capacity are due to background corridor growth not associated with the proposed development.

It is recommended that minor road and active transportation infrastructure improvements be considered by the City of London. Specifically, TMIG suggests that signal coordination be applied, if not existing, Oxford Street West, to improve levels of service and manage existing high traffic volumes. It is also recommended that the City monitor the intersection of Oxford Street West and Beaverbrook Avenue, prior to 2026 to implement a traffic signal to accommodate background corridor growth. Pedestrian and cycling improvements are also recommended to close first/last-mile gaps in the City's Active Mobility Network around the subject lands, specifically along Oxford Street West, between Wonderland Road North and Platt's Lane.

The intersection of Beaverbrook Avenue and Oxford Avenue satisfied a signal warrant only in future total 2035 conditions; however, due to background corridor growth in 2026 unrelated to site-generated traffic, it is recommended that this intersection be signalized by 2026 to mitigate and manage high traffic volumes. None of the proposed internal intersections satisfied the AWSC warrant. Beaverbrook Avenue and Proudfoot Lane satisfied AWSC warrant under future total 2026 conditions and was carried through in the future total 2035 conditions.

The TDM Plan, inclusive of an Active Transportation Plan, proposes infrastructure enhancements and promotional TDM measures to help the development meet and exceed the City of London's objectives to reduce automobile dependency and vehicular demand, and encourage/promote carpooling, transit, cycling, walking, rideshare, and future services.

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APPENDIX A

Pre-Consultation Correspondence



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

Amar Lad

From:
Sent:
To:
Cc:
Subject:

Hi Amar,

Thank you for the chat. Transportation support the revised background growth as this development is driving the bulk of the development in the area over this time from outside of some infill development.

Thank you,



Joshua Gardiner
Technologist II
Transportation Planning and Design
City of London

300 Dufferin Ave., London ON N6A 4L9
P: 519.661.CITY(2489) x 7365
jgardine@london.ca | www.london.ca

As part of our ongoing efforts to stop the spread of COVID-19, the City of London has made changes to many City services. Visit our [website for the latest information about City services and COVID-19](#).

From: Amar Lad <ALad@tmig.ca>
Sent: Thursday, May 06, 2021 10:33 AM
To: Gardiner, Joshua <jgardine@london.ca>; Chamorro, Juan <jchamorr@london.ca>
Cc: Jessica van Ravens <jvanRavens@tmig.ca>; Michael Dowdall <MDowdall@tmig.ca>
Subject: [EXTERNAL] RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Hi Josh,

Thanks for the quick reply and taking the time to chat this morning. As we discussed, TMIG will proceed with a final study horizon year of 2035 and gradually reduce corridor growth, as follows:

For Oxford Street West, Beaverbrook Avenue, Proudfoot Lane, and Wonderland Road North

- 1% growth rate from existing to 2030
- 0.5% growth rate from 2030 to 2035

For Cherryhill Blvd and Platt's Lane

- 0.5% growth rate from existing to 2035

Please confirm the above is accurate and we'll proceed with the study.

Thank you,

Amar Lad
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From: Gardiner, Joshua <jgardine@london.ca>
Sent: May 6, 2021 9:15 AM
To: Amar Lad <ALad@tmig.ca>; Chamorro, Juan <jchamorr@london.ca>
Subject: RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Morning Amar,

I think it is reasonable to set your horizon year to 2035 for the scope of the TIA. Also we could reduce background growth to 1.0% across the entire timeframe if that makes more sense otherwise we would have to take a scaling approach with that gradual reduction. 1.0% is actually typical across the City, there are some areas we do bump it up, but on a longer horizon that may be unreasonable.

Let me know if there is anything else you need.

Thank you,



Joshua Gardiner
Technologist II
Transportation Planning and Design
City of London

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From: Amar Lad <ALad@tmig.ca>
Sent: Wednesday, May 05, 2021 4:14 PM
To: Gardiner, Joshua <jgardine@london.ca>; Chamorro, Juan <jchamorr@london.ca>
Subject: [EXTERNAL] RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Good afternoon Josh,

In our TIS Terms of Reference, we had indicated the inclusion of a “five-year post full-build-out” final study horizon, in accordance with the City’s TIS guidelines. Our client team has just confirmed that the “full build out” horizon year will not be until 2035, with an interim phase in 2026. Accordingly our final horizon year would need to be 2040.

Given the considerable timeline being proposed, **will the city accept 2035 (full build out) as the final study horizon within the Transportation Impact Study?**

In addition, we are concerned about the impact of the requested 2% background corridor growth compounded on the boundary road network for 15-20 years from existing. Typically network growth during such a timeframe would be detailed in a secondary plan study, rather than layered in a TIS, as the latter would not accurately reflect growth over such a period.

In this case, we assume background corridor growth may be in part accounting for the growth generated from the development of the study lands, doubling the trips added to the network over 15-20 years.

Given the timeline, will the city consider reducing the corridor growth rates required within the study? If not for the first phase, can we scale back corridor growth to approximately 0.5% after 5 years? **Please let us know what reduced rates would be accepted, and/or quantify the gradual reduction in rates over the study period.**

Due to the time-sensitive nature of this submission, I would appreciate your response by Monday, May 10th. Feel free to call me directly to discuss.

Thanks,

Amar Lad
Transportation Planner

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The Municipal Infrastructure Group Ltd.
a T.Y. Lin International Company

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From: Amar Lad

Sent: April 14, 2021 9:48 AM

To: Gardiner, Joshua <jgardine@london.ca>; Chamorro, Juan <jchamorr@london.ca>

Subject: RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Hi Joshua,

Thank you for sharing this additional information for our scope of work. Please see my acknowledgement below in **green** in regards to your comments.

Best,

Amar Lad
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m: +1.647.966.4225

From: Gardiner, Joshua <jgardine@london.ca>

Sent: April 13, 2021 12:11 PM

To: Amar Lad <ALad@tmig.ca>; Chamorro, Juan <jchamorr@london.ca>

Subject: RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

My apologies for the delay Amar,

Please find our answers below:

Ok to use the 2017 TMC for Wonderland at Beaverbrook with growth to existing conditions.

Road Improvements

Please provide any potential/committed future road / intersection / other transportation infrastructure improvements within the study area that could affect local traffic distribution or assignments. **Nothing current for the area. Noted.**

The City's 2013 TMP identifies the widening of Wonderland Road from 4 to 6 through lanes, from Riverside to Sarnia by 2023. Please confirm if this project should be included and confirm the year. **Currently on hold due to Londons declared Climate Emergency. EA is paused, widening is delayed indefinitely. Noted.**

Corridor Growth Rates

Please confirm the background traffic growth rates for the study roads, including Oxford Street West, Beaverbrook Avenue, Proudfoot Lane, Wonderland Road North, Cherryhill Blvd, and Platt's Lane. **Oxford Street West, Beaverbrook, Proudfoot Lane and Wonderland 2.0%, Cherryhill and Platt's Lane 1.5% growth. Noted.**

Background Developments

Please confirm the relevant background developments, if any, to be included in the study. Should the studies for any background developments be available, please provide them. **I'm sure you are aware of the Mudcreek EA, and to have regard for that, likely will have little weight on a TIA. Rapid Transit is on hold through this corridor, and it will be years before any thing develops in relation to that. The property at 530 Oxford Street is undergoing a massive redevelopment, but to this point has not been officially submitted for any review. It is anticipated that this site will generate hundreds of trips to Oxford and Wonderland in the peaks hours in the future, but I cannot speak to this on an official level at this time. I have also attached a TIA for a site located on the South West corner of Oxford at Beaverbrook which may be helpful, from 2018.**

Yes, we are aware of the Mudcreek EA and will include references to it.

Noted and we won't consider any Rapid Transit within our study horizon.

Since there is no data available for 530 Oxford Street, we will not include this as a background development within our study.

Thanks, we will include the development on the southwest corner of Oxford and Beaverbrook within our study.

Riverside Drive at Beaverbrook was recently signalized, may or may not have an impact. **Noted, but we do not anticipate any impact as this is outside of our proposed study area.**

Let us know if you require anything else.

Thank you,



Joshua Gardiner
Technologist II
Transportation Planning and Design
City of London

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jgardine@london.ca | www.london.ca

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From: Amar Lad <ALad@tmig.ca>

Sent: Tuesday, April 13, 2021 11:53 AM

To: Gardiner, Joshua <jgardine@london.ca>; Chamorro, Juan <jchamorr@london.ca>
Subject: [EXTERNAL] RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Hi Juan,

Hope you're well. I'm following up on our request for information regarding road improvements, growth rates and background developments, for the Beaverbrook lands ToR, as detailed in the below thread with Joshua.

In addition, please advise if we can utilize an Oct 2017 TMC for the intersection of Wonderland Rd N and Beaverbrook Ave, and grow it to existing conditions in our study. This was the newest TMC we could acquire from the City's traffic team, and we are currently unable to obtain new counts due to ongoing lockdowns and the resulting abnormal traffic patterns.

Please let me know at your earliest so we can get back on track with our review.

Thanks,

Amar Lad
Transportation Planner

TMIG | TYLI

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From: Gardiner, Joshua <jgardine@london.ca>
Sent: March 29, 2021 4:14 PM
To: Amar Lad <ALad@tmig.ca>
Subject: RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Hi Amar,

I will try to get this out to you in the next few days. As of today Juan Chamorro, <jchamorr@london.ca> will deal with these sort of requests as he has taken over Andrew Giesens role in which I have been filling in.

Thank you,



Joshua Gardiner
Technologist II
Transportation Planning and Design
City of London

300 Dufferin Ave., London ON N6A 4L9
P: 519.661.CITY(2489) x 7365
jgardine@london.ca | www.london.ca

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From: Amar Lad <ALad@tmig.ca>
Sent: Monday, March 29, 2021 1:28 PM
To: Gardiner, Joshua <jgardine@london.ca>
Subject: [EXTERNAL] RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Good afternoon Joshua,

Circling back to this TOR for the Beaverbrook lands TIS, could you please provide and/or confirm the following information, relevant to the study?

Road Improvements

Please provide any potential/committed future road / intersection / other transportation infrastructure improvements within the study area that could affect local traffic distribution or assignments.

The City's 2013 TMP identifies the widening of Wonderland Road from 4 to 6 through lanes, from Riverside to Sarnia by 2023. Please confirm if this project should be included and confirm the year.

Corridor Growth Rates

Please confirm the background traffic growth rates for the study roads, including Oxford Street West, Beaverbrook Avenue, Proudfoot Lane, Wonderland Road North, Cherryhill Blvd, and Platt's Lane.

Background Developments

Please confirm the relevant background developments, if any, to be included in the study. Should the studies for any background developments be available, please provide them.

Thank you very much for your assistance with this project. Feel free to reach out to me directly if you need more information.

Best,


Amar Lad
TMIG | TYLI
p: +1.905.738.5700 x284
m: +1.647.966.4225

From: Gardiner, Joshua <jgardine@london.ca>
Sent: March 1, 2021 1:34 PM
To: Amar Lad <ALad@tmig.ca>
Subject: RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Afternoon Amar,

My apologies for the delay. The Terms outlined to proceed with the TIS are acceptable to Transportation, and we offer no additional comments at this time.

Thank you,

 **Joshua Gardiner**
Technologist II
Transportation Planning and Design
City of London

300 Dufferin Ave., London ON N6A 4L9

P: 519.661.CITY(2489) x 7365
jgardine@london.ca | www.london.ca

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From: Amar Lad <ALad@tmig.ca>
Sent: Monday, March 01, 2021 12:16 PM
To: Gardiner, Joshua <jgardine@london.ca>
Subject: [EXTERNAL] RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Hi Josh,

Just following up on the below request to confirm the TIS ToR.

Thanks,

Amar Lad
TMIG | TYLI
m: +1.647.966.4225

From: Amar Lad
Sent: February 11, 2021 12:50 PM
To: 'jgardine@london.ca' <jgardine@london.ca>
Subject: FW: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Good afternoon Josh,

Hope all is well on your end. I'm following up to confirm that Transportation did not have any formal comments on the attached TIS Terms of Reference for the Beaverbrook lands, as per Mike Corby's email from a few weeks ago.

I understand the TOR seemed appropriate, but want to confirm we have a green light to proceed with the traffic study, as proposed, to hopefully save time during the review process.

Thanks,

Amar Lad
TMIG | TYLI
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m: +1.647.966.4225

From: Corby, Mike <mcorby@London.ca>
Sent: January 14, 2021 10:40 AM
To: Amar Lad <ALad@tmig.ca>
Cc: Michael Dowdall <MDowdall@tmig.ca>; Tony Dang <TDang@tmig.ca>
Subject: RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Hi Amar,

Josh Gardiner from our Transportation division is happy to work with you on this.

He has indicated that the TOR seem appropriate and if you need any additional information to reach out to him (jgardine@london.ca).



Mike Corby, RPP, MCIP

Senior Planner

Development Services

City of London

300 Dufferin Ave, London ON N6A 4L9
P: 519.661.2489 x 4657 | Fax: 519.661.5397
mcorby@london.ca | www.london.ca

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From: Amar Lad <ALad@tmig.ca>
Sent: Tuesday, January 12, 2021 4:43 PM
To: Corby, Mike <mcorby@London.ca>; Carnegie, Rob <rcarnegie@london.ca>
Cc: Michael Dowdall <MDowdall@tmig.ca>; Tony Dang <TDang@tmig.ca>
Subject: [EXTERNAL] RE: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Hello Mike and Rob,

Hope you're both doing well and had a good break.

I'm just following up to see if you have a timeline for comments on the attached Beaverbrook TOR? Please let me know if you would like a meeting to discuss the details or if we can proceed with the traffic study following the proposed scope of work.

Thanks,

Amar Lad
TMIG | TYLI
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m: +1.647.966.4225

From: Amar Lad <alad@municipalinfgroup.onmicrosoft.com>
Sent: December 10, 2020 1:17 PM
To: mcorby@London.ca; rcarnegie@london.ca
Cc: Michael Dowdall <MDowdall@tmig.ca>; Tony Dang <TDang@tmig.ca>
Subject: Terms of Reference | Beaverbrook Lands - Transportation Impact Study

Good afternoon Mike and Rob,

The Municipal Infrastructure Group Ltd. (TMIG) has been retained to prepare a Transportation Impact Study in regard to the Draft Plan of Subdivision on the Beaverbrook Lands, including the parcels of land at 323 Oxford Street West, 92 Proudfoot Lane, and 825 Proudfoot Lane, in the City of London.

In order to properly scope this study, we ask that the City of London provide comments on the attached Terms of Reference and confirm if there are any additional items required as part of the project. We are happy to arrange a meeting to discuss further, if required.

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

Regards,

Amar Lad
Transportation Planner

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SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

APPENDIX B

Mud Creek EA Opinion Letter



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

June 28, 2021

PROJECT NUMBER 16126

Lou Pompilii
Manager, Development Planning
City of London
300 Dufferin Ave.
P.O. Box 503
London, ON N6A 4L9

Dear Mr. Pompilii,

**Re: Class EA Opinion on the Mud Creek Channel Crossings
The Beaverbrook Lands, London, Ontario (File #TS2020-004)**

An Initial Proposal Report was submitted for the Beaverbrook Lands (323 Oxford Street West, 92 Proudfoot Lane, and 825 Proudfoot Lane) in March 2020 by MBTW-WAI on behalf Sam Katz Holdings Limited. TMIG was retained by Sam Katz Holdings to provide engineering services related to this application since 2016. A proposal review meeting was held in June 2020 during which City of London staff provided feedback to the applicant's consulting team.

The City's feedback under the Proposal Review Meeting Summary and Record of Consultation (June 23, 2020) included a comment under Transportation Planning and Design regarding the need for a Municipal Class Environmental Assessment (Class EA) channel crossings:

"As part of a complete application the applicants engineer is to provide an opinion letter regarding the need for an EA for the two proposed Mud Creek channel crossings (Street A and Street B)."

TMIG has reviewed the proposed channel crossings, background on Mud Creek, and the proposed development on the Beaverbrook Lands and have summarized our findings and opinion in the following sections.

The proposed Street A and Street B crossings are to connect the local street network and development to the south and west of the proposed Mud Creek realignment to Beaverbrook Avenue. In conceptual design analysis previously completed on behalf of Sam Katz Holdings, TMIG had specified concrete box culvert crossings of 6.0 m width by 2.0 m height across the proposed 60 m channel corridor, noting that the cross structure is subject to change in later design stages.

With respect to Class EA requirements, the Municipal Engineers Association (MEA) guidance indicates that construction of new water crossings are Schedule B projects if under \$2.4 million in value and Schedule C projects for over \$2.4 million in value.

In 2017, the City completed the Mud Creek Subwatershed Class EA (CH2M Hill Canada Limited, 2017) which included the Beaverbrook Lands within the study area. During the Class EA process, TMIG provided feedback to the City on behalf of Sam Katz Holdings, and in particular, a conceptual design for the Mud Creek Channel north of Oxford Street on the Beaverbrook Lands was submitted for inclusion in the EA study. It included a realigned Mud Creek channel and up to three proposed channel crossings along this reach of the creek. These 'developer-led' works were integrated into the study and formed a component of the recommended preferred solution. The Class EA followed the Schedule B process and satisfied the Class EA requirements for all the projects recommended from the study, including the channel crossing on the Beaverbrook site.

In TMIG's opinion, the proposed channel crossings and realigned Mud Creek channel were included as part of the recommended solution in the approved 2017 Mud Creek Subwatershed Class EA, thus the Class EA requirement has been satisfied.

We trust that this letter provides the information required to address the need for an EA for the proposed channel crossings at the Beaverbrook Lands, per the City's comment. Should you have any concerns please do not hesitate to contact the undersigned.

Sincerely,

THE MUNICIPAL INFRASTRUCTURE GROUP LTD.
A T.Y. LIN INTERNATIONAL COMPANY



Tony Dang, P. Eng.
Water Resources Engineer
tdang@tmig.ca



Steve Hollingworth, P. Eng.
Director of Stormwater Management
shollingworth@tmig.ca

cc: Rob Carnegie, City of London (RCarnegie@london.ca)
Mike Corby, City of London (MCorby@london.ca)
Michael Hannay, the MBTW Group (m.hannay@mbtw.com)

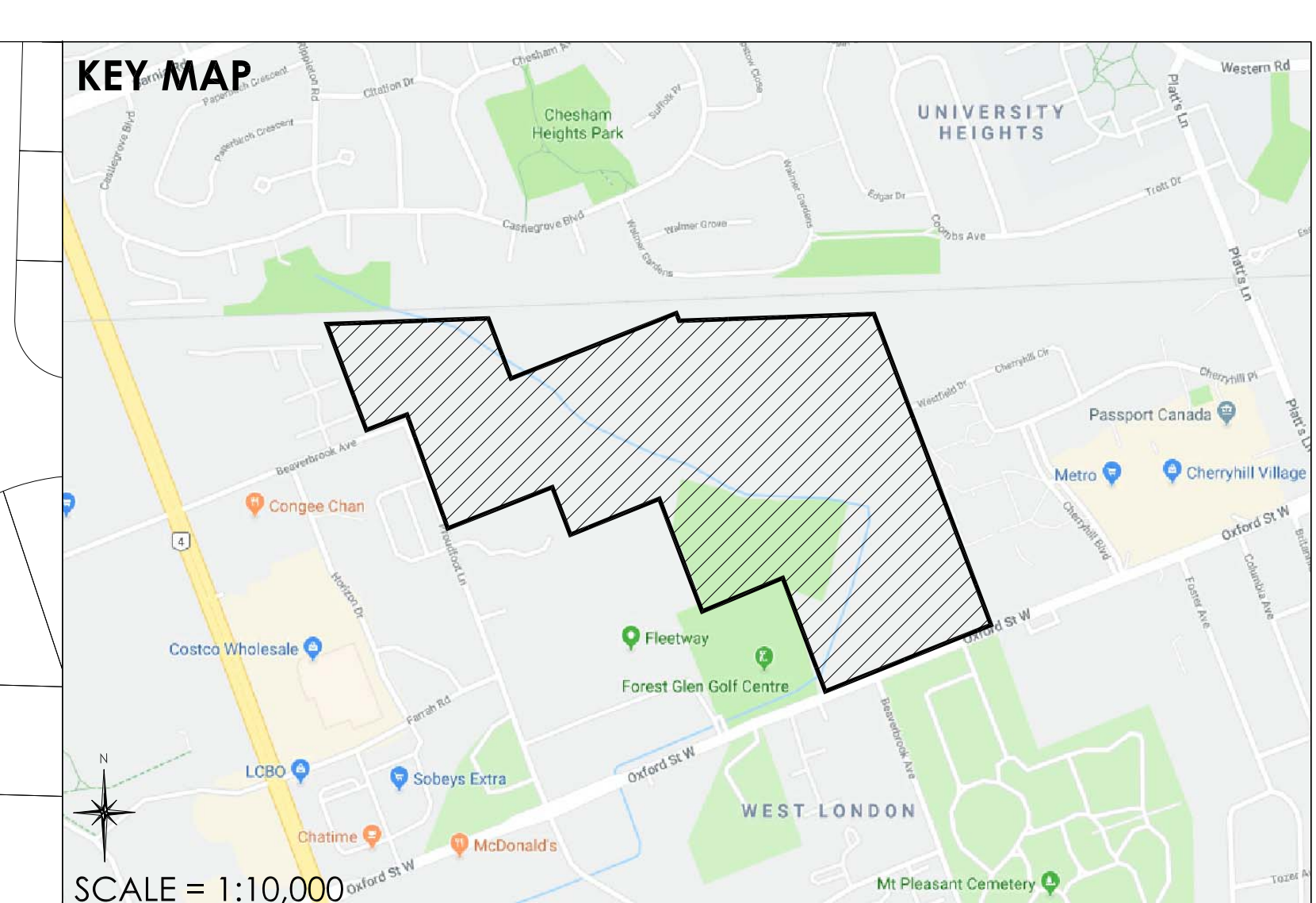
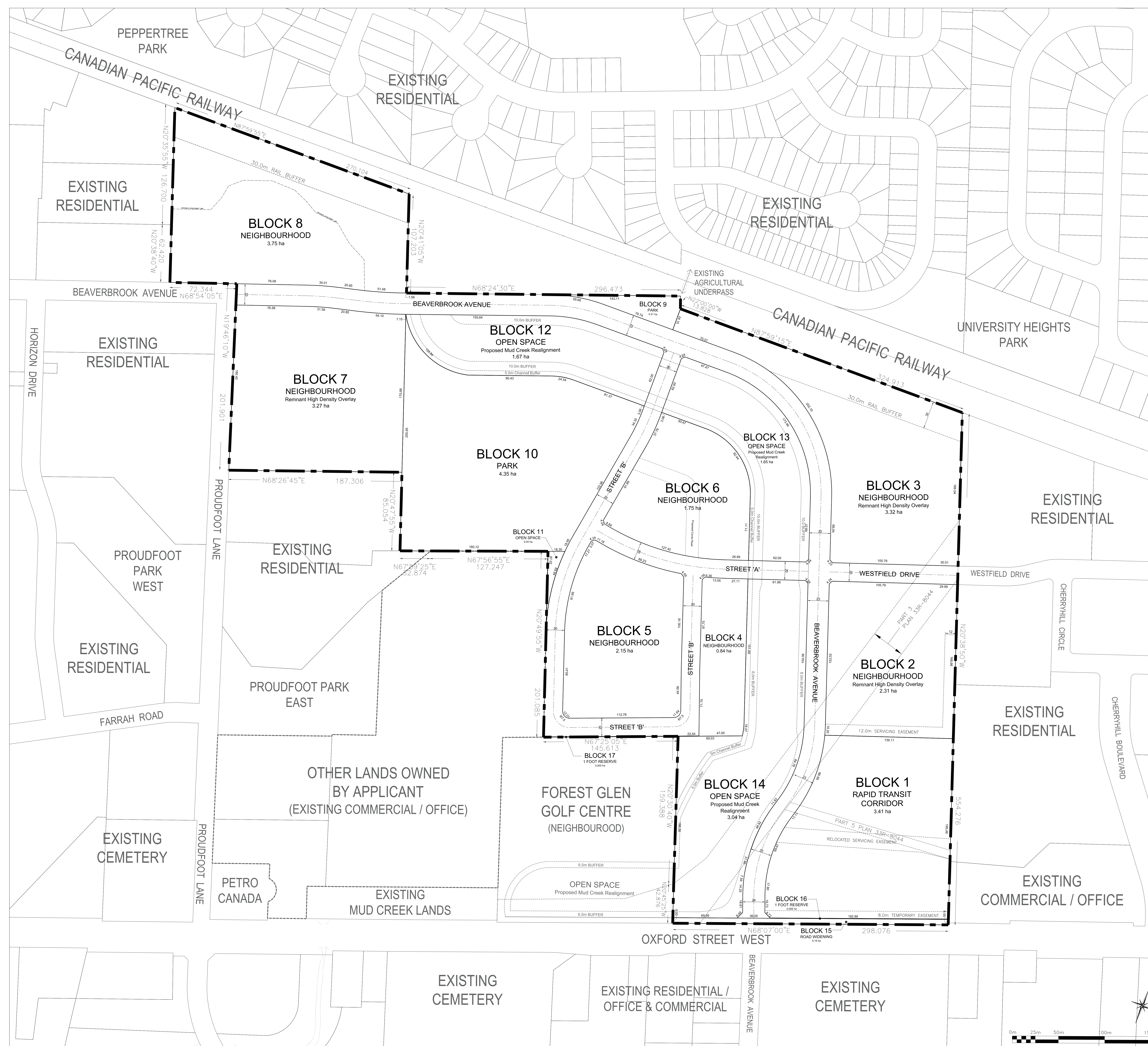
APPENDIX C

Draft Plan Review and Circulation



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON



DRAFT PLAN OF SUBDIVISION

File No. 39T87009
PART OF LOT 19, CONCESSION 2
CITY OF LONDON
COUNTY OF MIDDLESEX

OWNER'S CERTIFICATE
I, THE UNDERSIGNED, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZE THE MBTW GROUP TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND TO SUBMIT SAME TO THE CITY OF LONDON FOR APPROVAL.

DATE: _____
Sam Katz Developments Ltd.

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

DATE: _____
MTE Ontario Land Surveyors Ltd.

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

a) AS SHOWN	g) AS SHOWN
b) AS SHOWN	h) MUNICIPAL WATER SUPPLY
c) REFER TO KEY PLAN	i) CLAY, LOAM SOIL
d) AS SHOWN	j) AS SHOWN
e) AS SHOWN	k) MUNICIPAL SERVICES
f) AS SHOWN	l) AS SHOWN

METRIC
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

STATISTICS

PROPOSED LAND USE	BLOCK	UNITS	AREA (ha)
Rapid Transit Corridor	1	850	3.41ha
Neighbourhood (Remnant H.D.O.)	2	400	2.31ha
Neighbourhood (Remnant H.D.O.)	3	490	3.32ha
Neighbourhood	4	120	0.84ha
Neighbourhood	5	120	2.15ha
Neighbourhood	6	100	1.75ha
Neighbourhood (Remnant H.D.O.)	7	490	3.27ha
Neighbourhood	8	280	3.75ha
Park	9-10	-	4.56ha
Open Space	11-14	-	6.41ha
Road Widening	15	-	0.18ha
1 Foot Reserve	16-17	-	0.01ha
TOTAL	17	2,850	31.96ha

ROADS	STREET	LENGTH	AREA (ha)
20m ROW	A. S. Westfield Drive	1,106m	2.25ha
23-24m ROW	Beaverbrook Avenue	1,204m	2.75ha
TOTAL		2,310m	5.00ha

TOTAL 36.96ha

Revision #	Description	Date
1	Revised to reflect updated environmental features	March 3, 2020
2	Revised to address City comments	July 15, 2021

Title: **Beaverbrook Draft Plan**

Scale: 1:1250
NOTE: Elevations Shown hereon relate to Canadian Geodetic Datum
Date: January 1999
Job #: EGP001
Dwg#: DP2



Stopping sight distance is the sum of the distance travelled during the perception and reaction time and the braking distance.

$$SSD = 0.278Vt + 0.039 \frac{V^2}{a} \quad (2.5.2)$$

Where:

- SSD = Stopping sight distance (m)
- t = Brake reaction time, 2.5 s
- V = Design speed (km/h)
- a = Deceleration rate (m/s²)

Table 2.5.2 gives the minimum stopping sight distances on level grade, on wet pavement, for a range of design speeds. These values are used for vertical curve design, intersection geometry and the placement of traffic control devices. The stopping sight distances quoted in Table 2.5.2 may need to be increased for a variety of reasons related to grade and vehicle type as noted below.

Table 2.5.2: Stopping Sight Distance on level roadways for Automobiles⁵⁴

Design speed (km/h)	Brake reaction distance (m)	Braking distance on level (m)	Stopping sight distance	
			Calculated (m)	Design (m)
20	13.9	4.6	18.5	20
30	20.9	10.3	31.2	35
40	27.8	18.4	46.2	50
50	34.8	28.7	63.5	65
60	41.7	41.3	83.0	85
70	48.7	56.2	104.9	105
80	55.6	73.4	129.0	130
90	62.6	92.9	155.5	160
100	69.5	114.7	184.2	185
110	76.5	138.8	215.3	220
120	83.4	165.2	248.6	250
130	90.4	193.8	284.2	285

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 3.4 m/s² used to determine calculated sight distance.

2 TRANSPORTATION

2.1 ROADS DESIGN

2.1.1 Design Speed

Design speed shall be based on the following chart:

Posted Speed (km/h)	Design Speed (km/h)
50 and below	60
60	70
70	80
80	90
90	110
100	120

Design speed for Neighbourhood Connectors shall be 60km/h unless adjacent to schools or high pedestrian generators such as regional parks in such cases a design speed of 50km/h is to be used. Design Speed for Neighbourhood Streets shall be 60km/h if the number of residential unit is equal to or exceeds 45, in cases where the Neighbourhood Street serves less than 45 units, or is adjacent to a school or high pedestrian generator such as a regional park a design speed of 50km/h is to be used.

2.1.2 Centreline Radii

- a. Expressway, Rapid Transit Boulevard, Urban Thoroughfare, Civic Boulevard, Urban Thoroughfare in Primary Transit Area, Main Street, Rural Thoroughfare, and Rural Connector shall be derived from Table C3-3 of the Geometric Design Standards for Ontario Highways. This chart is a summary of typical design speeds versus standard super elevation grades taken from C3-3.

Design Speed (km/h)	Minimum Radius (m)			
	Normal Crown	Reverse Crown 2%	Superelevation 4%	Superelevation 6%
40	700	500	160	55
50	1100	750	250	90
60	1600	1100	365	130
70	2200	1500	500	190
80	3000	2000	675	250
90	3500	2500	875	340
100	4500	3500	1100	420

1. Source: *Geometric Design Standards for Ontario Highways – Table C3-3*

- b. Neighbourhood Connectors and Neighbourhood Streets for new Construction
- i. Neighbourhood Connectors and Neighbourhood Streets shall have centerline horizontal curves which meet or exceed the City of London Standard “Minimum Centreline Radii of Curvature for Roads in Subdivisions”. Refer to Fig.2.1.
 - ii. Neighbourhood Streets with bends of approximately 90 degrees are to have a minimum inside street-line radius in accordance with the following:

Road Allowance	Street Line Radius
20.0m	9.0m

Note: Bends of 90 degrees are only permitted on Neighbourhood Streets. Refer to Fig.2.2.

- iii. For window street design information reference should be made to Section 1.1.3.b).
- iv. The use of back to back horizontal curves or reverse curves will not be permitted on any new street. Straight tangents are required between curves, minimum tangents for varying road types will be determined by the City Engineer.

c. Reconstruction Projects

The reconstruction of existing roads are to have the centreline horizontal alignments reviewed by the applicable Project Manager on a site specific basis.

2.1.3 Radii for Curb & Gutter

- a. Intersection Radii for curb and gutter should be measured at edge of pavement. The following chart illustrates the required radii.

		To:		
		Rapid Transit Boulevard, Urban Thorough, Civic Boulevard, Urban Thoroughfare/Civic Boulevard in Primary Transit Area, Main Street, Rural Thoroughfare	Neighbourhood Connector	Neighbourhood Street
From:	Rapid Transit Boulevard, Urban Thorough, Civic Boulevard, Urban Thoroughfare/Civic Boulevard in Primary Transit Area, Main Street, Rural Thoroughfare	15m	15m	12m
	Neighbourhood Connector	15m	7.5m	7.5m
	Neighbourhood Street	7.5m	7.5m	7.5m
	Industrial Streets	15m	15m	15m

b. Intersection Radii on Bus Routes & Daylighting Requirements

- i. All intersections that have, or are proposed to be, future bus routes are to have 15.0m radii regardless of the classification of the road;
- ii. a 3.0m daylighting triangle is required where a 15.0 m radius is needed at the intersection of a Neighbourhood Connector or a Neighbourhood Street;
- iii. a 6.0m daylighting triangle is required for any road type connection to a Rapid Transit Boulevard, Urban Thorough, Civic Boulevard, Urban Thoroughfare/Civic Boulevard in Primary Transit Area, Main Street, Rural Thoroughfare.

c. Cul-de-sacs

The minimum required radii of curvature for curb & gutters for a residential and industrial cul-de-sac are as per City of London SR-5.0 and SR-5.1.

2.1.4 Lane Widths

For multi-lane roads or channelized intersections, minimum lane widths shall be based on the following chart.

Description	Width (m)
Right Turn Lane	3.0
Left Turn Lane	3.0
Through Lane*	3.3
Curb Lane (single lane per direction)	3.5
2-way Left Turn Lane	4.0

*For Rural Thoroughfares a paved 2.5m wide and 0.5m wide gravel shoulder is required adjacent to the travel lane, for Rural Connectors a paved 0.5m wide and 2.5m wide gravel shoulder are required adjacent to the curb lane.

NOTE: In situations with higher design speeds or higher road classifications, wider lane widths may be required.

2.1.5 Right of Way, Pavement and Boulevard Widths

Pavement widths, right of way widths and boulevard widths shall be based on the following chart. (edge of pavement to edge of pavement)

Usage ³	R.O.W. (m)	Pavement (m)	Boulevard (m) Both Sides ⁶
Expressway	100	Varies	Varies
Rapid Transit Boulevard	50	Varies	Varies
Urban Thoroughfare, Main Street	45	Varies	Varies
Civic Boulevard, Urban Thoroughfare/ Civic Boulevard in Primary Transit Area, Rural Thoroughfare	36	Varies	Varies
Rural Connector	26	Varies	Varies
Neighbourhood Connector	23	Varies	Varies
Neighbourhood Street	20	Varies	6.5 (0-44 units) 7.5 (45 units or greater)
Neighbourhood Street	20	7.5	6.25

- 1) The pavement width of Neighbourhood Connectors shall be widened to 11m when they connect to Rapid Transit Boulevard, Urban Thoroughfare, Civic Boulevard, Urban Thoroughfare/Civic Boulevard in Primary Transit Area, Main Streetm Neighbourhood Connector, Rural Thoroughfare and Rural Connectors. The storage length shall be 45m, taken from the end of the curb and gutter radii and the return taper should be 30m. The right-of-way at these widening should be increased to 24.0m.
- 2) The pavement width of Neighbourhood Streets serving 60 units or more shall be widened to 10m when they connect to Rapid Transit Boulevard, Urban Thoroughfare, Civic Boulevard, Urban Thoroughfare/Civic Boulevard in Primary Transit Area, Main Streetm Neighbourhood Connector, Rural Thoroughfare and Rural Connectors. The storage length shall be 30m, taken from the end of the curb and gutter radii and the

e) Surface Course Asphalt Policy

Transportation Planning & Design has set a criteria to establish a consistent application of asphalt selection on City Roads based on traffic volumes and expected life span.

Superpave 12.5FC1 is a premium surface asphalt mix with coarse aggregate that is more resistant to rutting and maintains good skid resistance. HL 4 is a coarser mix with slightly higher stability suitable for rural uses. HL3 and Superpave 12.5 are a finer mix with improved aesthetic qualities for use in urban applications with pedestrians and other active transportation uses.

Superpave 12.5FC1	<ul style="list-style-type: none"> • 20,000 AADT OR Average Daily Truck Traffic > 1,000 AND • Pavement life expectancy of at least 10 years
HL4	<ul style="list-style-type: none"> • Rural applications
HL3 and/or Superpave 12.5	<ul style="list-style-type: none"> • All other applications

f) PGAC

All Superpave 12.5FC1 applications shall use of PGAC 64-28 asphalt cement with a higher quality aggregate. The aggregate shall be on the MTO designated sources list and the City of London Standard Contract Documents for Municipal Projects.

HL3 and Superpave 12.5 shall use PGAC 58-28, unless a higher grade PGAC is specified by the City of London.

Where warranted and practical (typically major roads), the City is also encouraging the use of a Material Transfer Vehicle (Shuttlebuggy), echelon paving and a joint heater for the placement of the surface course asphalt. Please discuss the use of these with the Transportation Planning and Design Division (TP&D) for specific projects as this approach can produce a more durable road surface for long term use.

2.1.12 Transition Between Road Types

Transition from two lanes to four or from four lanes to six should be made using the taper dimensions noted in the table in Section 2.1.14 in relation to design speed. The transition should be clearly signed with a Wa-23 and a Wa-40 as per the Ontario Traffic Manual – Book 6. Transition from hard surface to loose surface should be signed with a Wa-25 and a Wa-25T.

2.1.13 Access and Sight Distance

As determined from Figure E3-8 of the *Geometric Design Standards for Ontario Highways*, the following stopping sight distances shall be provided at intersections and accesses:

- a. On new intersections and major accesses such as large commercial or industrial development, the desirable decision sight distance shall be provided.
- b. On all other new accesses, the minimum decision sight distance shall be provided.

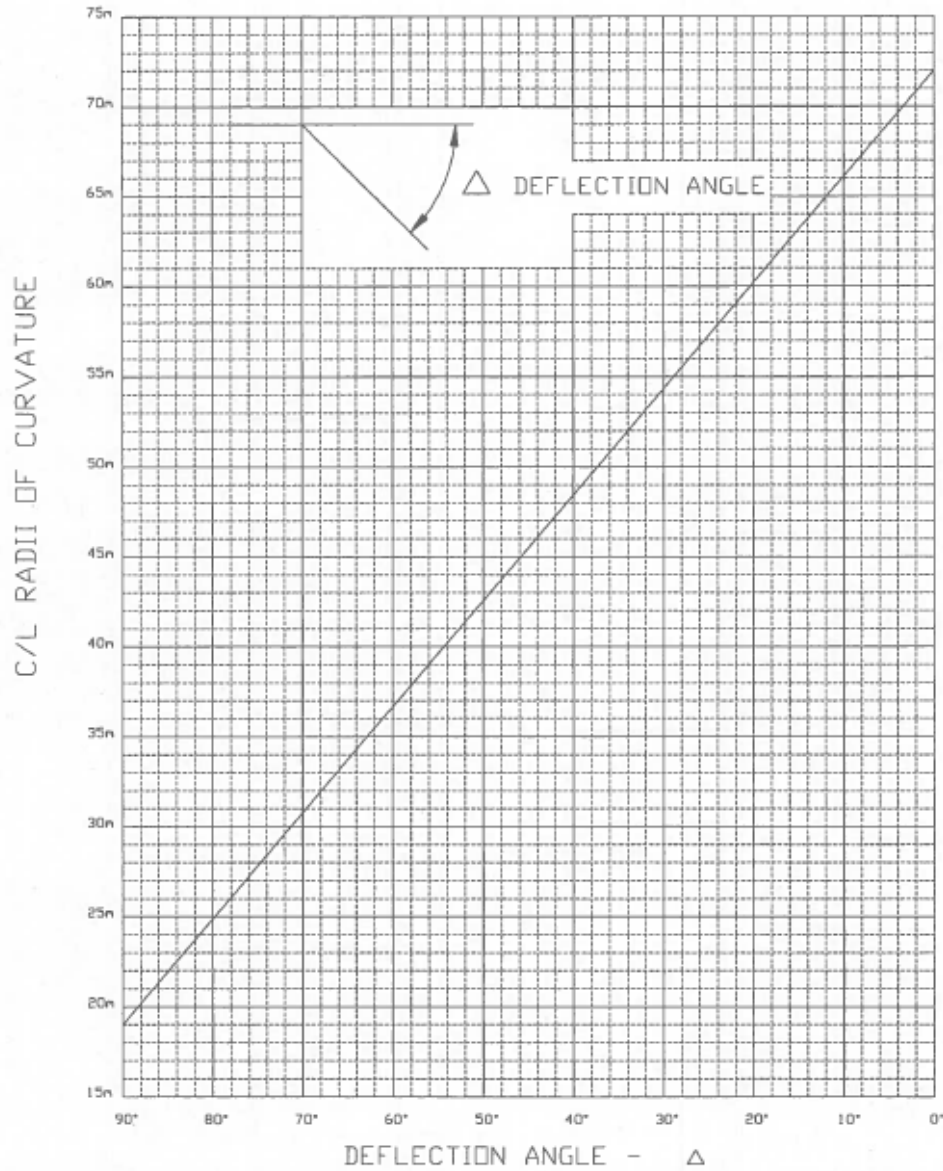
NOTES:

1. NEIGHBOURHOOD CONNECTORS
2. NEIGHBOURHOOD STREETS
 - a) 90° BENDS (DESIRABLE - 2 MAX./CRES.)
 - b) OTHER BENDS

C/L RADII

150 METRES

19 METRES



CITY OF LONDON STANDARD DRAWING

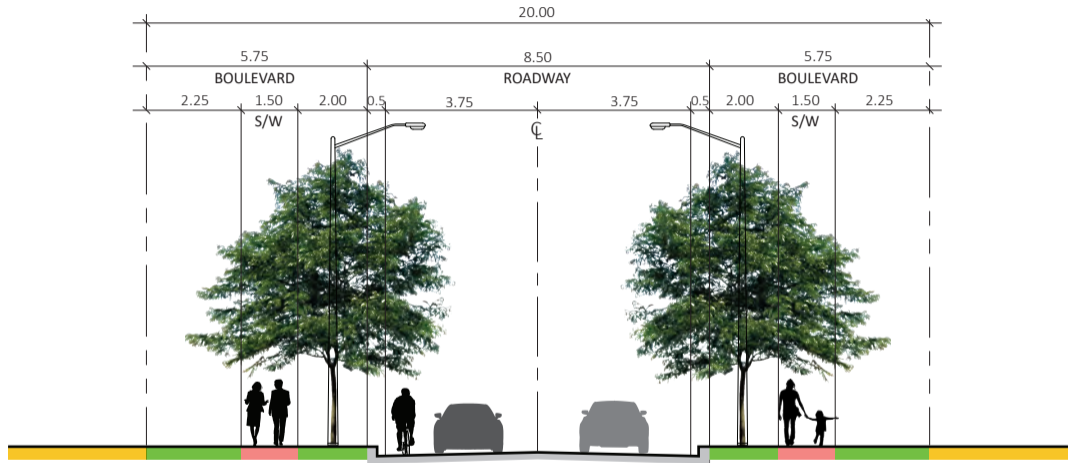
MINIMUM C/L RADII OF CURVATURE OF
ROADS IN SUBDIVISIONS

DWG FIG. 2.1

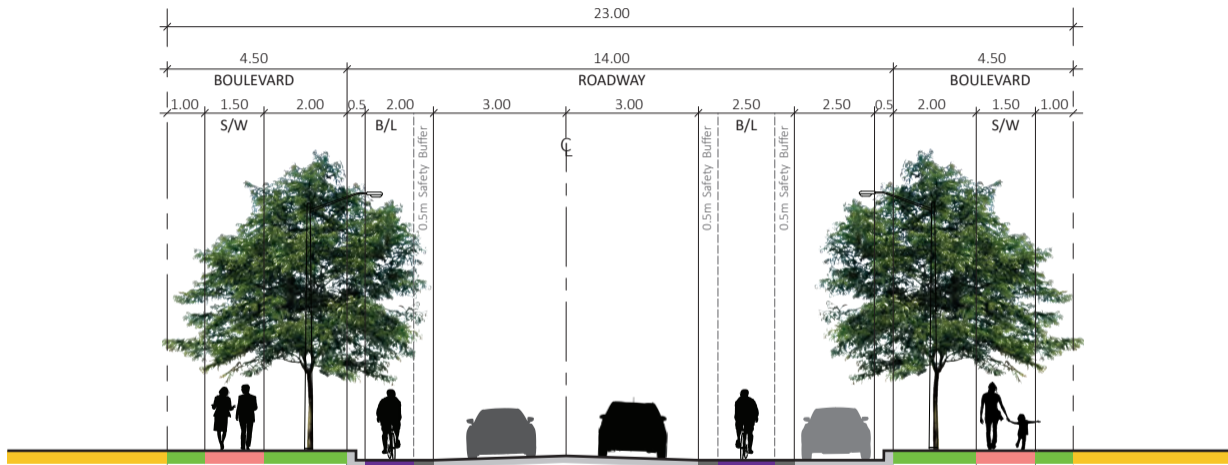
DATE 2012 01 26
REV'D 2019 07 31

APPROVED BY
CITY ENGINEER

[Handwritten Signature]

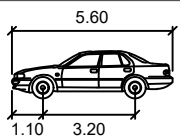
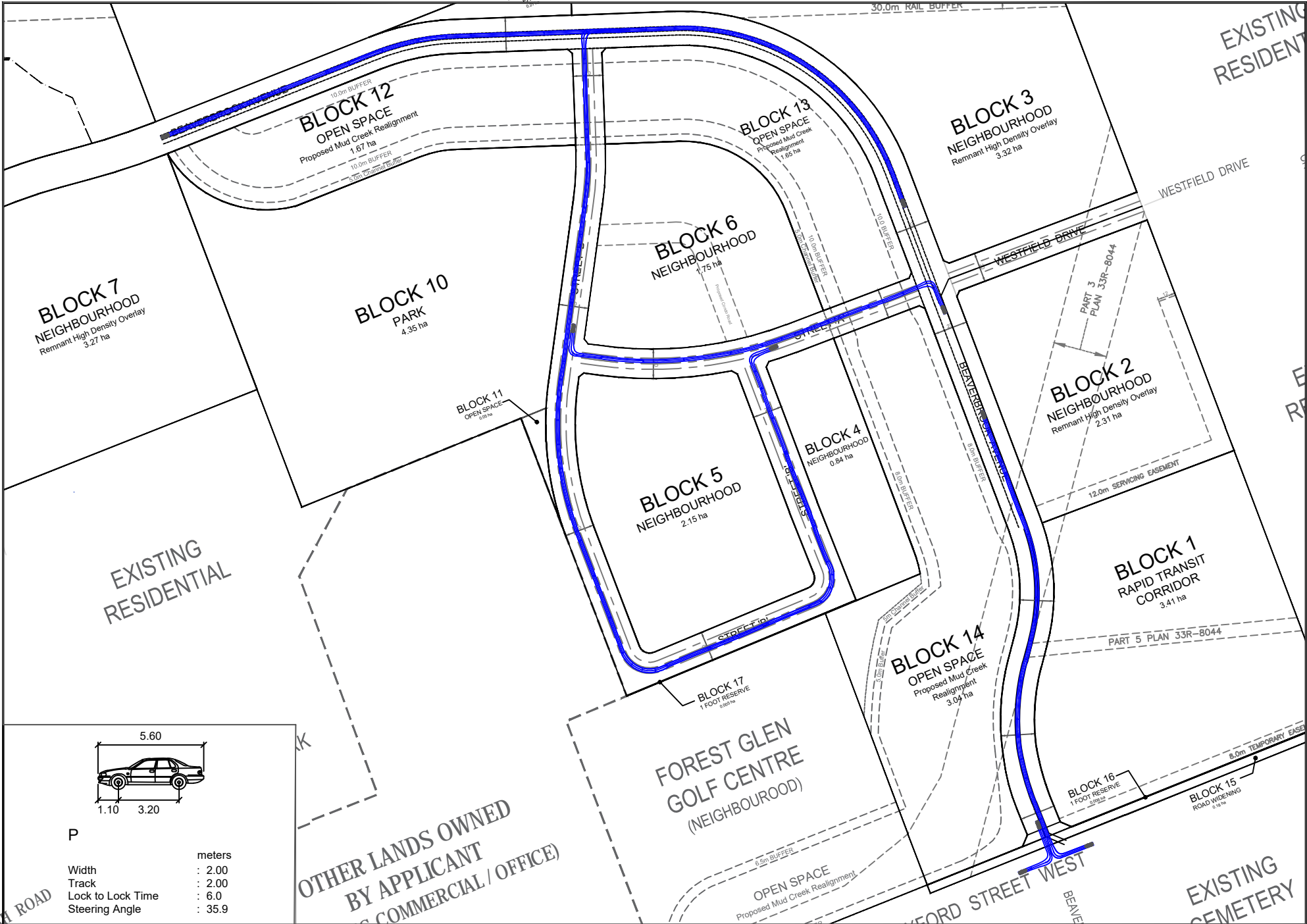


Proposed Neighbourhood Street Cross-Section - 20 metres



Proposed Neighbourhood Street Cross-Section - 23 metres

G:\Projects\2016\16126 - Mud Creek\Transportation\03 Analysis\03 Site Review & Circulation\Design



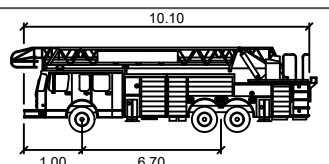
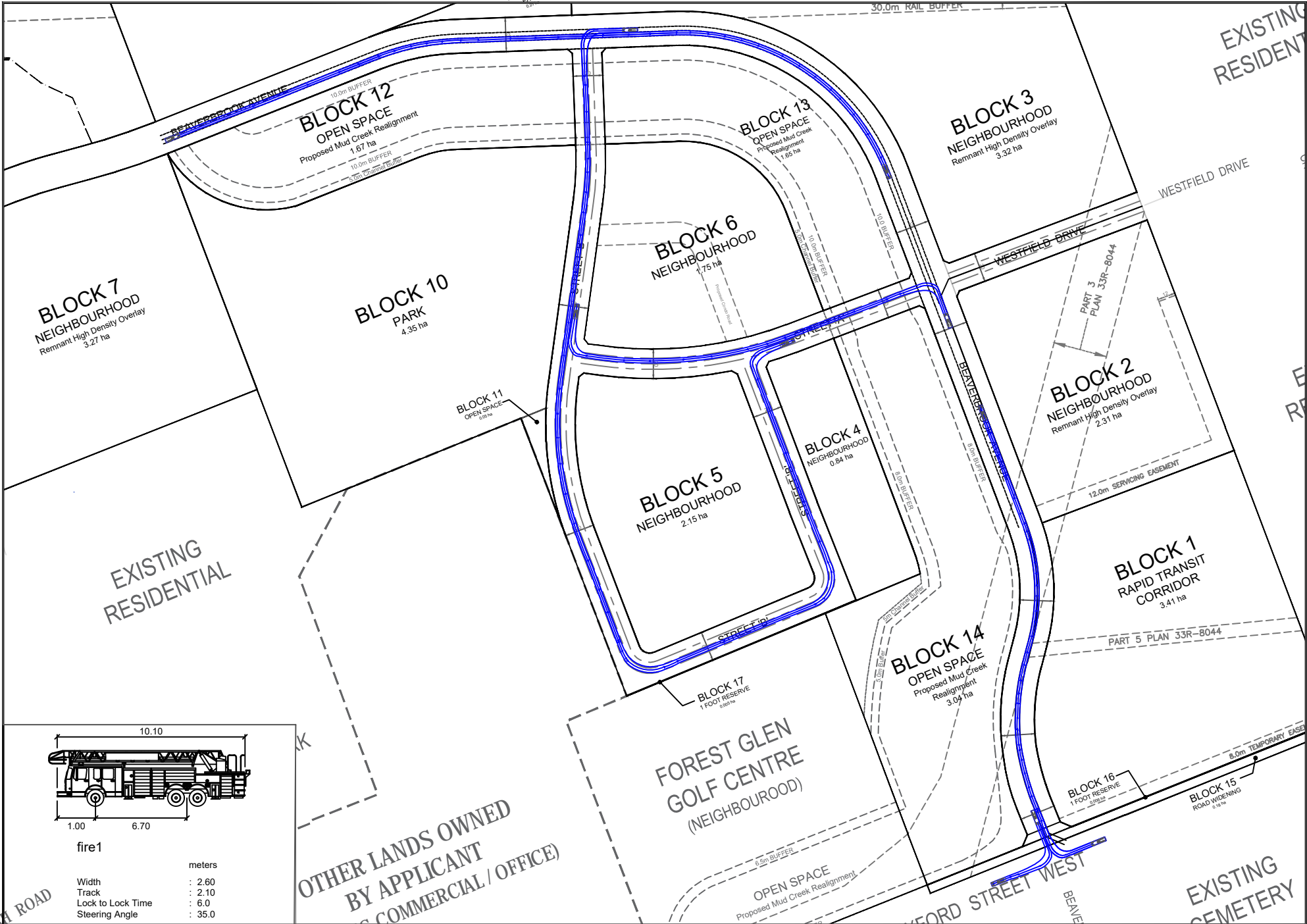
P	units
Width	: 2.00 meters
Track	: 2.00 meters
Lock to Lock Time	: 6.0 seconds
Steering Angle	: 35.9 degrees

OTHER LANDS OWNED BY APPLICANT (EXISTING COMMERCIAL / OFFICE)

Passenger Vehicle Maneuvers - Site Circulation
 16126 - Mud Creek TIS - The MBTW Group and W Architect inc.

SCALE:	N.T.S.	PROJECT No:	16126
DATE:	MAY 2021	DESIGNED BY:	S.R.
		DRAWN BY:	S.R.
CHECKED BY:		CHECKED BY:	
		FIGURE No:	VMD-1

G:\Projects\2016\16126 - Mud Creek\Transportation\03 Analysis\03 Site Review & Circulation\Design



fire1

	10.10	
Width	: 2.60	meters
Track	: 2.10	
Lock to Lock Time	: 6.0	
Steering Angle	: 35.0	

OTHER LANDS OWNED
BY APPLICANT
(EXISTING COMMERCIAL / OFFICE)

TMIG
A TYLON INTERNATIONAL COMPANY

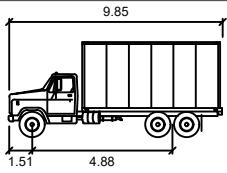
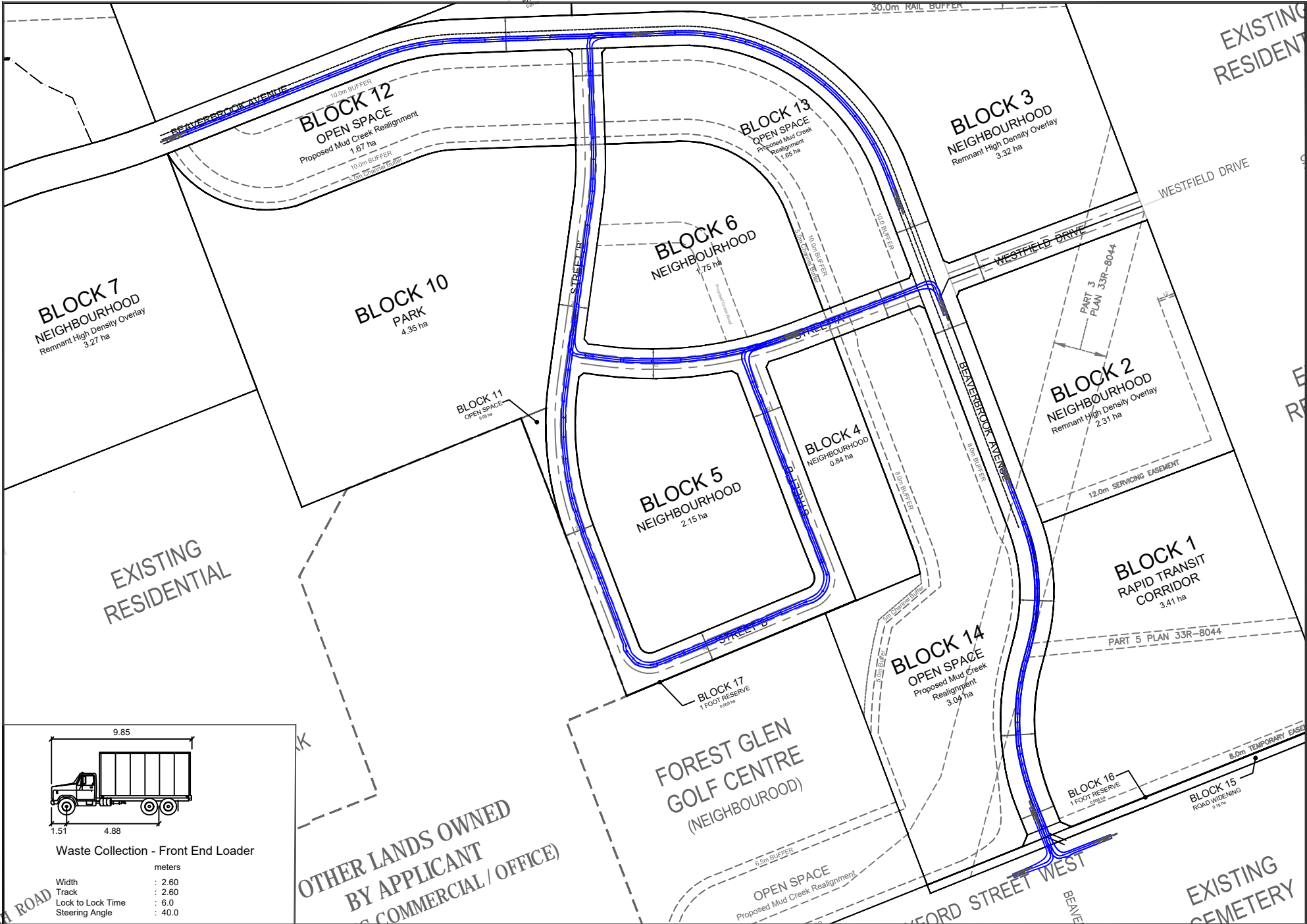
8800 Dufferin Street,
Suite 200
Vaughan, ON
L4K 0G5

p: 905.738.5700
f: 905.738.0065

Emergency Vehicle Maneuvers - Site Circulation
16126 - Mud Creek TIS - The MBTW Group and W Architect inc.

SCALE:	N.T.S.	PROJECT No:	16126
DATE:	MAY 2021	DESIGNED BY:	S.R.
		DRAWN BY:	S.R.
CHECKED BY:		CHECKED BY:	
		FIGURE No:	VMD-2

G:\Projects\2016\16126 - Mud Creek\Transportation\03 Analysis\03 Site Review & Circulation\Design



Waste Collection - Front End Loader

Width : 9.85 meters
 Track : 4.88 meters
 Lock to Lock Time : 6.0
 Steering Angle : 40.0

OTHER LANDS OWNED
 BY APPLICANT
 (EXISTING COMMERCIAL / OFFICE)

TMIG
 A TYLON INTERNATIONAL COMPANY

8800 Dufferin Street,
 Suite 200
 Vaughan, ON
 L4K 0G5

p: 905.738.5700
 f: 905.738.0065

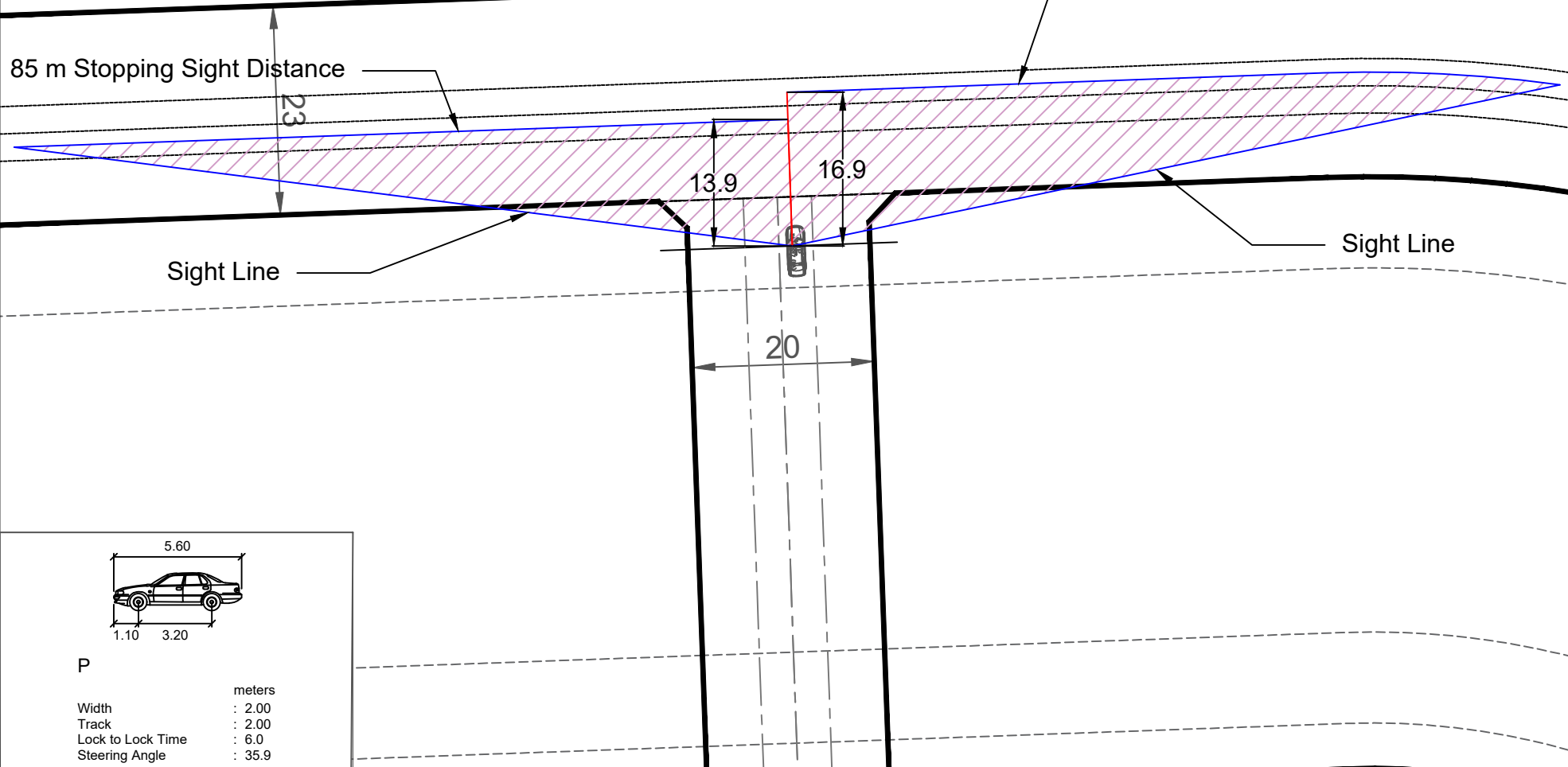
Waste Removal Vehicle Maneuvers - Site Circulation
 16126 - Mud Creek TIS - The MBTW Group and W Architect inc.

SCALE: N.T.S.	PROJECT No: 16126
DATE: MAY 2021	FIGURE No: VMD-3
DESIGNED BY: S.R.	DRAWN BY: S.R.
CHECKED BY:	CHECKED BY:

BLOCK 9
PARK
 0.21 ha

85 m Stopping Sight Distance

85 m Stopping Sight Distance



Sight Line

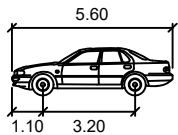
Sight Line

20

13.9

16.9

23



P

- Width : 2.00 meters
- Track : 2.00
- Lock to Lock Time : 6.0
- Steering Angle : 35.9



8800 Dufferin Street,
 Suite 200
 Vaughan, ON
 L4K 0G5
 p: 905.738.5700
 f: 905.738.0065

Sight Line Visibility Triangles - Beaverbrook Avenue & Street B
 16126 - Mud Creek TIS - The MBTW Group and W Architect inc.

SCALE: N.T.S.		PROJECT No.
DATE: MAY 2021		16126
DESIGNED BY: S.R.	DRAWN BY: S.R.	FIGURE No.
CHECKED BY:	CHECKED BY:	SSD-1

G:\Projects\2016\16126 - Mud Creek\Transportation\03 Analysis\03 Site Review & Circulation\Design

G:\Projects\2016\16126 - Mud Creek\Transportation\Analysis\03 Site Review & Circulation\Design

BLOCK 6 NEIGHBOURHOOD 1.75 ha

5.0m Channel Buffer
10.0m BUFFER

85 m Stopping Sight Distance
Sight Line

85 m Stopping Sight Distance

STREET 'B'

Sight Line

85 m Stopping Sight Distance

STREET 'A'

85 m Stopping Sight Distance

85 m Stopping Si

85 m Stopping Sight Distance

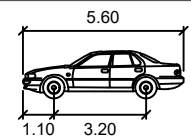
Sight Line

Sight Line

BLOCK 11 OPEN SPACE 0.05 ha

BLOCK 4 NEIGHBOURHOOD 0.84 ha

BLOCK 5 NEIGHBOURHOOD



P

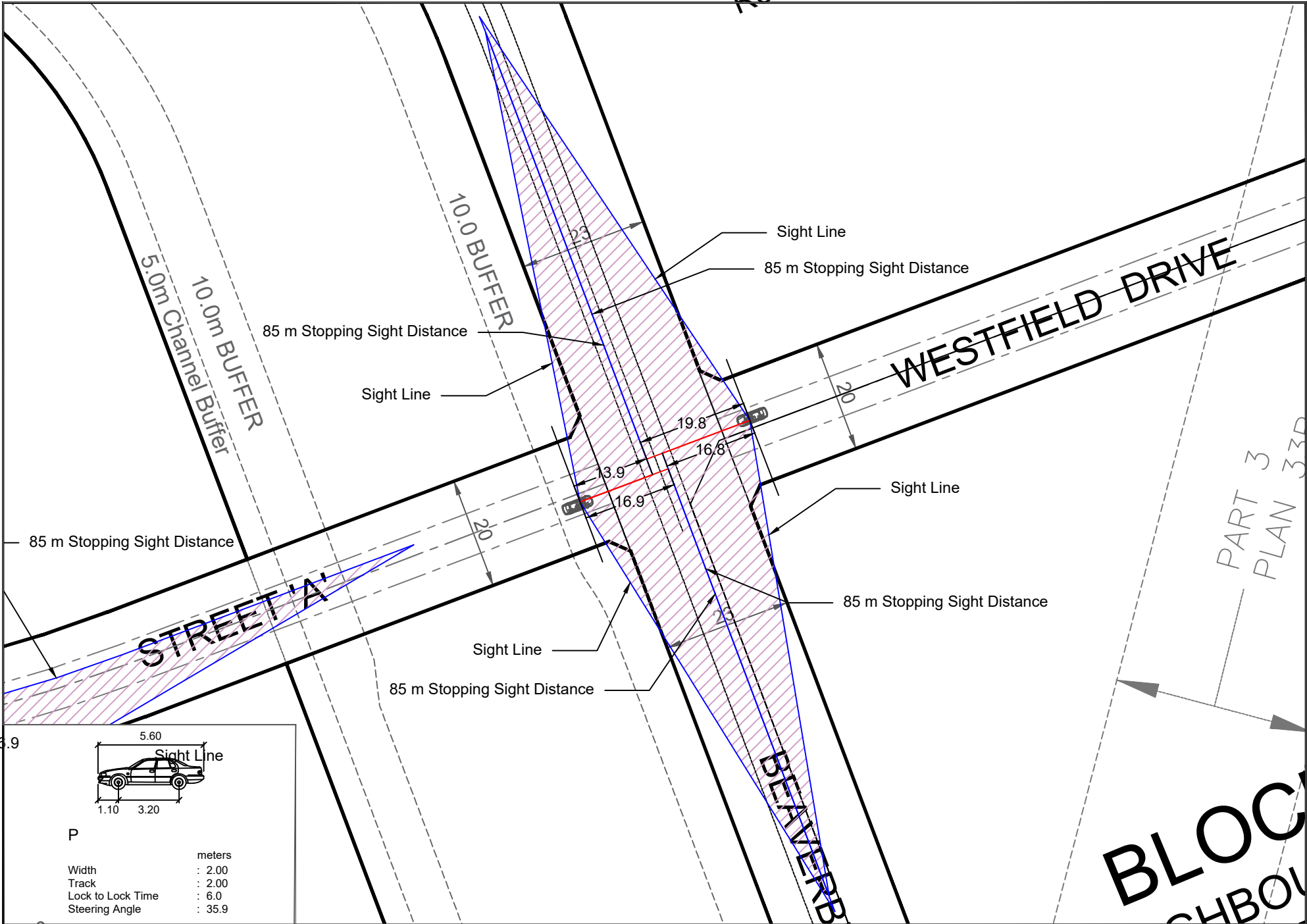
	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9

8800 Dufferin Street,
Suite 200
Vaughan, ON
L4K 0G5
p: 905.738.5700
f: 905.738.0065

Sight Line Visibility Triangles - Street A & Street B
16126 - Mud Creek - The NFW Group and W Architect inc.

SCALE:	N.T.S.	PROJECT No:	16126
DATE:	MAY 2021	DESIGNED BY:	S.S.R.
		DRAWN BY:	S.R.
CHECKED BY:		CHECKED BY:	
		FIGURE No:	SSD-2

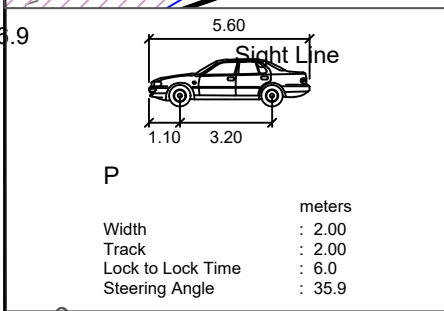
Remnant High



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PART 3
PLAN 33D

BLOCK
NEIGHBOURHOOD
Remnant High Density



Sight Line Visibility Triangles - Street A / Westfield Drive & Beaverbrook Avenue
16126 - Mud Creek TIS - The MBTW Group and W Architect Inc.

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A TYLON INTERNATIONAL COMPANY

8800 Dufferin Street,
Suite 200
Vaughan, ON
L4K 0G5

p: 905.738.5700
f: 905.738.0065

SCALE: N.T.S.	PROJECT No. 16126
DATE: MAY 2021	SSD-3
DESIGNED BY: S.B.	DRAWN BY: S.B.
CHECKED BY: S.B.	DATE: 4/26/2021



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

APPENDIX D

Existing Traffic Data



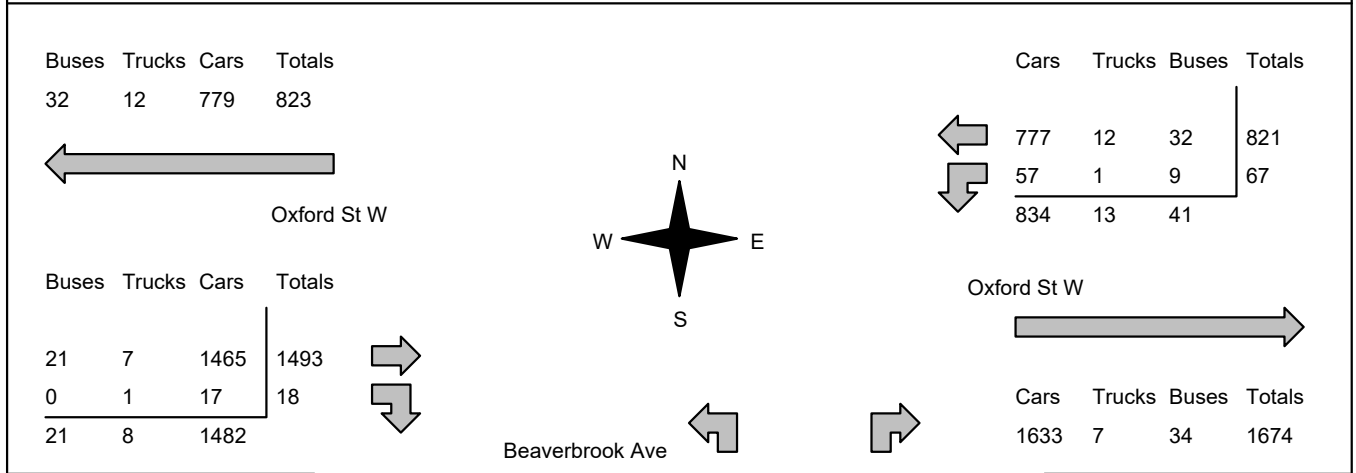
SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

Accu-Traffic Inc.

Morning Peak Diagram	Specified Period From: 6:30:00 To: 9:30:00	One Hour Peak From: 8:00:00 To: 9:00:00
Municipality: London Site #: 1919300001 Intersection: Oxford St W & Beaverbrook Ave TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:	
** Non-Signalized Intersection **	Major Road: Oxford St W runs W/E	

	East Leg Total: 2562 East Entering: 888 East Peds: 0 Peds Cross: 8
--	---



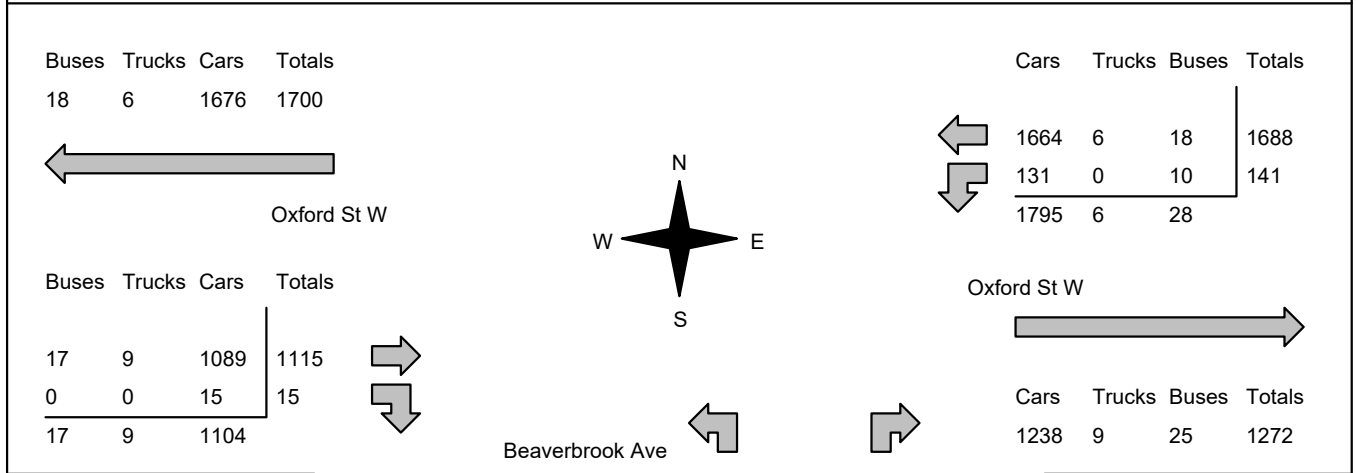
Peds Cross: 8 West Peds: 0 West Entering: 1511 West Leg Total: 2334	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>74</td><td>168</td><td>170</td></tr> <tr><td>Trucks</td><td>2</td><td>0</td><td>0</td></tr> <tr><td>Buses</td><td>9</td><td>0</td><td>13</td></tr> <tr><td>Totals</td><td>85</td><td>181</td><td></td></tr> </table>	Cars	74	168	170	Trucks	2	0	0	Buses	9	0	13	Totals	85	181		<table style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>2</td><td>168</td><td>170</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Buses</td><td>0</td><td>13</td><td>13</td></tr> <tr><td>Totals</td><td>2</td><td>181</td><td></td></tr> </table>	Cars	2	168	170	Trucks	0	0	0	Buses	0	13	13	Totals	2	181		Peds Cross: 8 South Peds: 7 South Entering: 183 South Leg Total: 268
Cars	74	168	170																																
Trucks	2	0	0																																
Buses	9	0	13																																
Totals	85	181																																	
Cars	2	168	170																																
Trucks	0	0	0																																
Buses	0	13	13																																
Totals	2	181																																	

Comments

Accu-Traffic Inc.

Afternoon Peak Diagram	Specified Period From: 16:00:00 To: 19:00:00	One Hour Peak From: 16:00:00 To: 17:00:00
Municipality: London Site #: 1919300001 Intersection: Oxford St W & Beaverbrook Ave TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:	
** Non-Signalized Intersection **	Major Road: Oxford St W runs W/E	

	East Leg Total: 3101 East Entering: 1829 East Peds: 0 Peds Cross: 8
--	--



Peds Cross: 8 West Peds: 0 West Entering: 1130 West Leg Total: 2830	<table style="width: 100%; border-collapse: collapse;"> <tr><td>Cars</td><td>146</td><td>Cars</td><td>12</td><td>149</td><td>161</td></tr> <tr><td>Trucks</td><td>0</td><td>Trucks</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Buses</td><td>10</td><td>Buses</td><td>0</td><td>8</td><td>8</td></tr> <tr><td>Totals</td><td>156</td><td>Totals</td><td>12</td><td>157</td><td></td></tr> </table>	Cars	146	Cars	12	149	161	Trucks	0	Trucks	0	0	0	Buses	10	Buses	0	8	8	Totals	156	Totals	12	157		Peds Cross: 12 South Peds: 12 South Entering: 169 South Leg Total: 325
Cars	146	Cars	12	149	161																					
Trucks	0	Trucks	0	0	0																					
Buses	10	Buses	0	8	8																					
Totals	156	Totals	12	157																						

Comments

Accu-Traffic Inc.

Total Count Diagram

Municipality: London
Site #: 1919300001
Intersection: Oxford St W & Beaverbrook Ave
TFR File #: 1
Count date: 27-Nov-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Oxford St W runs W/E

East Leg Total: 14835
 East Entering: 7025
 East Peds: 1
 Peds Cross: 8

Buses	Trucks	Cars	Totals
113	40	6372	6525



Oxford St W

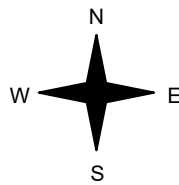
Cars	Trucks	Buses	Totals
6333	40	113	6486
489	1	49	539
6822	41	162	



Oxford St W



Buses	Trucks	Cars	Totals
98	40	6848	6986
2	2	80	84
100	42	6928	



Beaverbrook Ave

Cars	Trucks	Buses	Totals
7615	41	154	7810



Peds Cross: 8
 West Peds: 0
 West Entering: 7070
 West Leg Total: 13595

Cars	569
Trucks	3
Buses	51
Totals	623



Cars	39	767	806
Trucks	0	1	1
Buses	0	56	56
Totals	39	824	

Peds Cross: 29
 South Peds: 29
 South Entering: 863
 South Leg Total: 1486

Comments



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Oxford St W & Beaverbrook Ave Count Date: 27-Nov-19 Municipality: London


North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	40	7:00:00	2	0	38	40	3
8:00:00	0	0	0	0	0	133	8:00:00	1	0	132	133	2
9:00:00	0	0	0	0	0	183	9:00:00	2	0	181	183	7
16:00:00	0	0	0	0	0	84	16:00:00	0	0	84	84	2
17:00:00	0	0	0	0	0	169	17:00:00	12	0	157	169	12
18:00:00	0	0	0	0	0	134	18:00:00	12	0	122	134	3
19:00:00	0	0	0	0	0	120	19:00:00	10	0	110	120	0
Totals:	0	0	0	0	0	863	S Totals:	39	0	824	863	29
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	12	231	0	243	0	624	7:00:00	0	378	3	381	0
8:00:00	37	591	0	628	0	1891	8:00:00	0	1253	10	1263	0
9:00:00	67	821	0	888	0	2399	9:00:00	0	1493	18	1511	0
16:00:00	47	465	0	512	0	1135	16:00:00	0	615	8	623	0
17:00:00	141	1688	0	1829	0	2959	17:00:00	0	1115	15	1130	0
18:00:00	115	1530	0	1645	1	2706	18:00:00	0	1047	14	1061	0
19:00:00	120	1160	0	1280	0	2381	19:00:00	0	1085	16	1101	0
Totals:	539	6486	0	7025	1	14095	W Totals:	0	6986	84	7070	0
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00			17:00	18:00	19:00	0:00		
Crossing Values:	2	1	2	0			12	13	10	0		

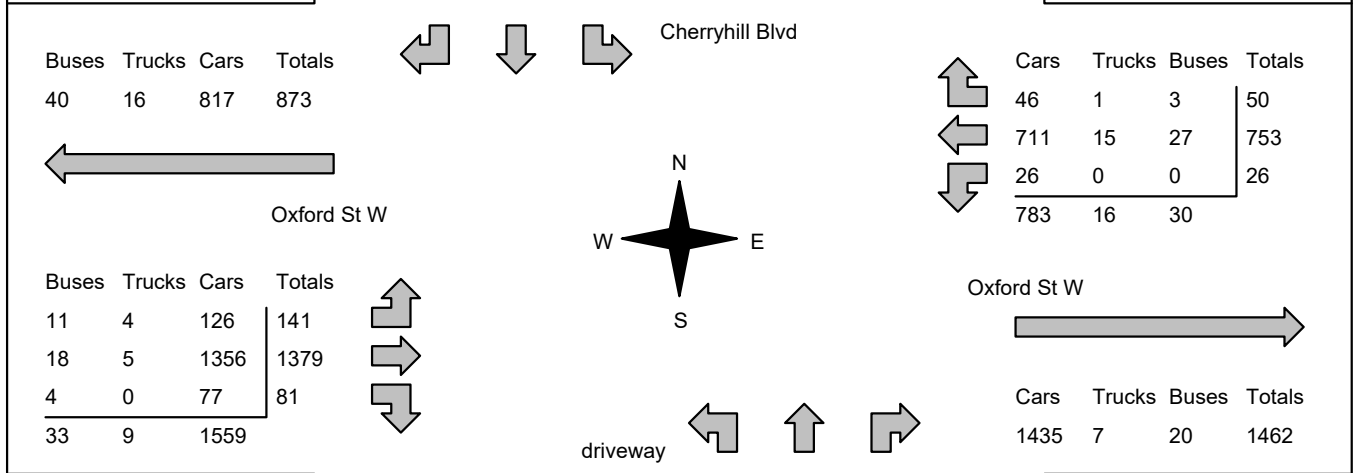
Accu-Traffic Inc.


Morning Peak Diagram	Specified Period From: 6:30:00 To: 9:30:00	One Hour Peak From: 8:00:00 To: 9:00:00
-----------------------------	---	--

Municipality: London Site #: 1919300002 Intersection: Oxford St W & Cherryhill Blvd TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:
--	---

** Signalized Intersection **	Major Road: Oxford St W runs W/E
--------------------------------------	---

North Leg Total: 389 North Entering: 195 North Peds: 17 Peds Cross: \times	<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>12</td><td>0</td><td>2</td><td>14</td></tr> <tr><td>Trucks</td><td>1</td><td>0</td><td>2</td><td>3</td></tr> <tr><td>Cars</td><td>89</td><td>22</td><td>67</td><td>178</td></tr> <tr><td>Totals</td><td>102</td><td>22</td><td>71</td><td></td></tr> </table>	Buses	12	0	2	14	Trucks	1	0	2	3	Cars	89	22	67	178	Totals	102	22	71			<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>14</td></tr> <tr><td>Trucks</td><td>5</td></tr> <tr><td>Cars</td><td>175</td></tr> <tr><td>Totals</td><td>194</td></tr> </table>	Buses	14	Trucks	5	Cars	175	Totals	194	East Leg Total: 2291 East Entering: 829 East Peds: 51 Peds Cross: \times
Buses	12	0	2	14																												
Trucks	1	0	2	3																												
Cars	89	22	67	178																												
Totals	102	22	71																													
Buses	14																															
Trucks	5																															
Cars	175																															
Totals	194																															



Peds Cross: \times West Peds: 42 West Entering: 1601 West Leg Total: 2474	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>125</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Buses</td><td>4</td></tr> <tr><td>Totals</td><td>129</td></tr> </table>	Cars	125	Trucks	0	Buses	4	Totals	129		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>17</td><td>3</td><td>12</td><td>32</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Buses</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>Totals</td><td>18</td><td>3</td><td>12</td><td></td></tr> </table>	Cars	17	3	12	32	Trucks	0	0	0	0	Buses	1	0	0	1	Totals	18	3	12		Peds Cross: \times South Peds: 11 South Entering: 33 South Leg Total: 162
Cars	125																															
Trucks	0																															
Buses	4																															
Totals	129																															
Cars	17	3	12	32																												
Trucks	0	0	0	0																												
Buses	1	0	0	1																												
Totals	18	3	12																													

Comments

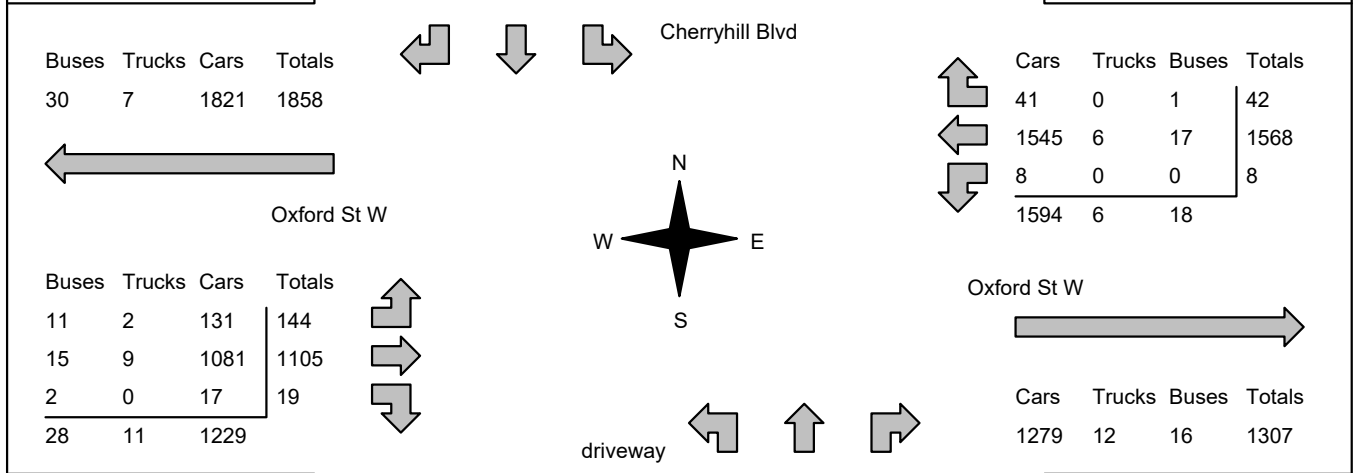
Accu-Traffic Inc.

Afternoon Peak Diagram	Specified Period From: 16:00:00 To: 19:00:00	One Hour Peak From: 16:00:00 To: 17:00:00
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Municipality: London Site #: 1919300002 Intersection: Oxford St W & Cherryhill Blvd TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:
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** Signalized Intersection **	Major Road: Oxford St W runs W/E
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North Leg Total: 615 North Entering: 422 North Peds: 19 Peds Cross: \boxtimes	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Buses</td><td>12</td><td>0</td><td>1</td><td style="border-left: 1px solid black;">13</td></tr> <tr><td>Trucks</td><td>1</td><td>0</td><td>3</td><td style="border-left: 1px solid black;">4</td></tr> <tr><td>Cars</td><td>232</td><td>1</td><td>172</td><td style="border-left: 1px solid black;">405</td></tr> <tr><td>Totals</td><td>245</td><td>1</td><td>176</td><td style="border-left: 1px solid black;"></td></tr> </table>	Buses	12	0	1	13	Trucks	1	0	3	4	Cars	232	1	172	405	Totals	245	1	176			<table style="border-collapse: collapse; margin: auto;"> <tr><td>Buses</td><td>12</td></tr> <tr><td>Trucks</td><td>2</td></tr> <tr><td>Cars</td><td>179</td></tr> <tr><td>Totals</td><td>193</td></tr> </table>	Buses	12	Trucks	2	Cars	179	Totals	193	East Leg Total: 2925 East Entering: 1618 East Peds: 28 Peds Cross: \boxtimes
Buses	12	0	1	13																												
Trucks	1	0	3	4																												
Cars	232	1	172	405																												
Totals	245	1	176																													
Buses	12																															
Trucks	2																															
Cars	179																															
Totals	193																															



Peds Cross: \boxtimes West Peds: 37 West Entering: 1268 West Leg Total: 3126	<table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>26</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Buses</td><td>2</td></tr> <tr><td>Totals</td><td>28</td></tr> </table>	Cars	26	Trucks	0	Buses	2	Totals	28		<table style="border-collapse: collapse; margin: auto;"> <tr><td>Cars</td><td>44</td><td>7</td><td>26</td><td style="border-left: 1px solid black;">77</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Buses</td><td>1</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">1</td></tr> <tr><td>Totals</td><td>45</td><td>7</td><td>26</td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	44	7	26	77	Trucks	0	0	0	0	Buses	1	0	0	1	Totals	45	7	26		Peds Cross: \boxtimes South Peds: 21 South Entering: 78 South Leg Total: 106
Cars	26																															
Trucks	0																															
Buses	2																															
Totals	28																															
Cars	44	7	26	77																												
Trucks	0	0	0	0																												
Buses	1	0	0	1																												
Totals	45	7	26																													

Comments

Accu-Traffic Inc.

Total Count Diagram

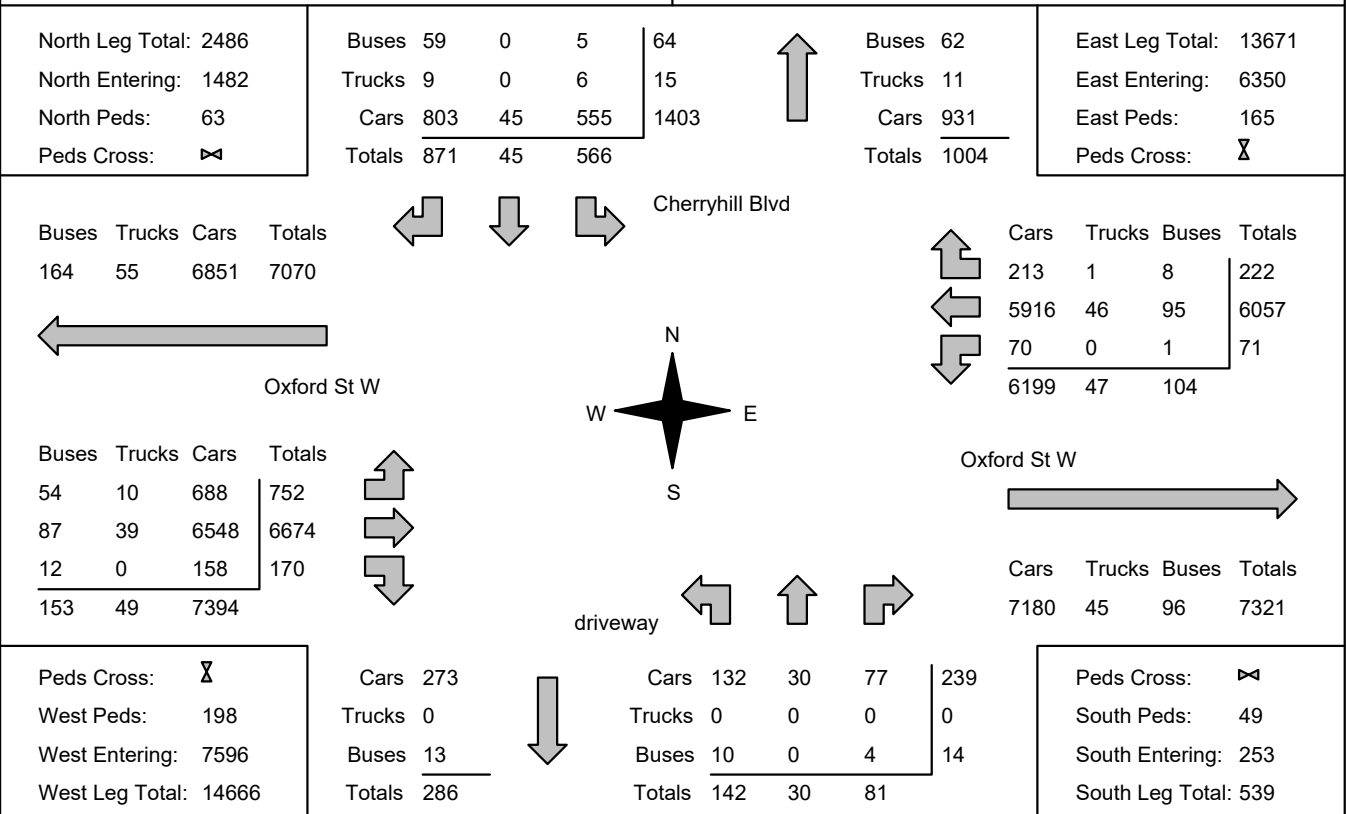
Municipality: London
Site #: 1919300002
Intersection: Oxford St W & Cherryhill Blvd
TFR File #: 1
Count date: 27-Nov-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Oxford St W runs W/E



Comments



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Oxford St W & Cherryhill Blvd Count Date: 27-Nov-19 Municipality: London

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	9	0	24	33	3	34	7:00:00	0	0	1	1	3
8:00:00	36	3	65	104	11	119	8:00:00	7	1	7	15	3
9:00:00	71	22	102	195	17	228	9:00:00	18	3	12	33	11
16:00:00	33	18	79	130	9	222	16:00:00	52	14	26	92	8
17:00:00	176	1	245	422	19	500	17:00:00	45	7	26	78	21
18:00:00	144	1	198	343	3	366	18:00:00	14	4	5	23	1
19:00:00	97	0	158	255	1	266	19:00:00	6	1	4	11	2
Totals:	566	45	871	1482	63	1735	S Totals:	142	30	81	253	49
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	1	222	3	226	0	640	7:00:00	20	394	0	414	18
8:00:00	10	573	17	600	6	1981	8:00:00	93	1271	17	1381	28
9:00:00	26	753	50	829	51	2430	9:00:00	141	1379	81	1601	42
16:00:00	11	370	18	399	76	1039	16:00:00	56	539	45	640	42
17:00:00	8	1568	42	1618	28	2886	17:00:00	144	1105	19	1268	37
18:00:00	13	1444	45	1502	4	2636	18:00:00	156	972	6	1134	20
19:00:00	2	1127	47	1176	0	2334	19:00:00	142	1014	2	1158	11
Totals:	71	6057	222	6350	165	13946	W Totals:	752	6674	170	7596	198
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00			17:00	18:00	19:00	0:00		
Crossing Values:	27	80	204	221			293	186	115	0		

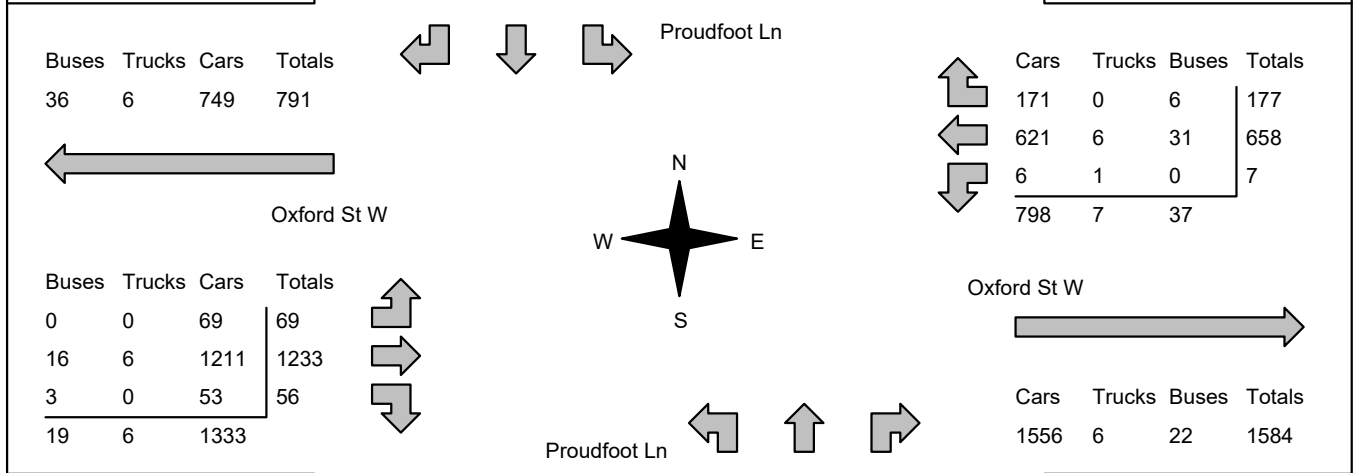
Accu-Traffic Inc.

Morning Peak Diagram	Specified Period From: 6:30:00 To: 9:30:00	One Hour Peak From: 8:00:00 To: 9:00:00
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Municipality: London Site #: 1919300003 Intersection: Oxford St W & Proudfoot Ln TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:
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** Signalized Intersection **	Major Road: Oxford St W runs W/E
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North Leg Total: 791 North Entering: 412 North Peds: 2 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>0</td><td>13</td><td>4</td><td>17</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>34</td><td>59</td><td>302</td><td>395</td></tr> <tr><td>Totals</td><td>34</td><td>72</td><td>306</td><td></td></tr> </table>	Buses	0	13	4	17	Trucks	0	0	0	0	Cars	34	59	302	395	Totals	34	72	306		↑	<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>13</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>366</td></tr> <tr><td>Totals</td><td>379</td></tr> </table>	Buses	13	Trucks	0	Cars	366	Totals	379	East Leg Total: 2426 East Entering: 842 East Peds: 15 Peds Cross: ☒
Buses	0	13	4	17																												
Trucks	0	0	0	0																												
Cars	34	59	302	395																												
Totals	34	72	306																													
Buses	13																															
Trucks	0																															
Cars	366																															
Totals	379																															



Peds Cross: ☒ West Peds: 10 West Entering: 1358 West Leg Total: 2149	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>118</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Buses</td><td>16</td></tr> <tr><td>Totals</td><td>135</td></tr> </table>	Cars	118	Trucks	1	Buses	16	Totals	135	↓	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>94</td><td>126</td><td>43</td><td>263</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Buses</td><td>5</td><td>7</td><td>2</td><td>14</td></tr> <tr><td>Totals</td><td>99</td><td>133</td><td>45</td><td></td></tr> </table>	Cars	94	126	43	263	Trucks	0	0	0	0	Buses	5	7	2	14	Totals	99	133	45		Peds Cross: ☒ South Peds: 5 South Entering: 277 South Leg Total: 412
Cars	118																															
Trucks	1																															
Buses	16																															
Totals	135																															
Cars	94	126	43	263																												
Trucks	0	0	0	0																												
Buses	5	7	2	14																												
Totals	99	133	45																													


Comments

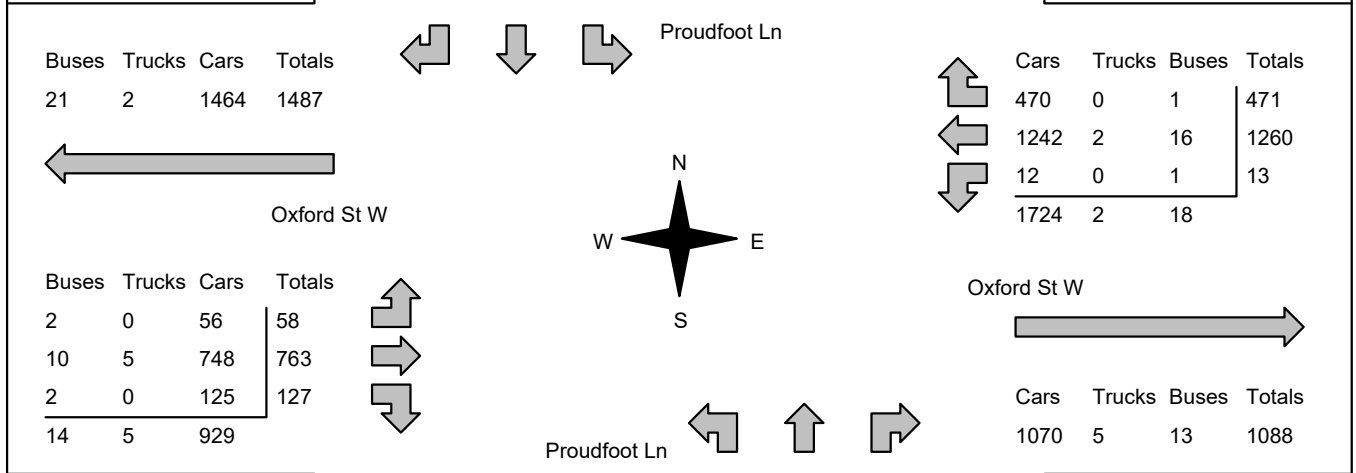
Accu-Traffic Inc.


Afternoon Peak Diagram	Specified Period From: 16:00:00 To: 19:00:00	One Hour Peak From: 16:15:00 To: 17:15:00
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Municipality: London Site #: 1919300003 Intersection: Oxford St W & Proudfoot Ln TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:
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** Signalized Intersection **	Major Road: Oxford St W runs W/E
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North Leg Total: 1315 North Entering: 513 North Peds: 21 Peds Cross: \bowtie	<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>0</td><td>9</td><td>2</td><td>11</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>62</td><td>150</td><td>290</td><td>502</td></tr> <tr><td>Totals</td><td>62</td><td>159</td><td>292</td><td></td></tr> </table>	Buses	0	9	2	11	Trucks	0	0	0	0	Cars	62	150	290	502	Totals	62	159	292			<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>8</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>794</td></tr> <tr><td>Totals</td><td>802</td></tr> </table>	Buses	8	Trucks	0	Cars	794	Totals	802	East Leg Total: 2832 East Entering: 1744 East Peds: 32 Peds Cross: \bowtie
Buses	0	9	2	11																												
Trucks	0	0	0	0																												
Cars	62	150	290	502																												
Totals	62	159	292																													
Buses	8																															
Trucks	0																															
Cars	794																															
Totals	802																															



Peds Cross: \bowtie West Peds: 22 West Entering: 948 West Leg Total: 2435	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>287</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Buses</td><td>12</td></tr> <tr><td>Totals</td><td>299</td></tr> </table>	Cars	287	Trucks	0	Buses	12	Totals	299		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>160</td><td>268</td><td>32</td><td>460</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Buses</td><td>5</td><td>5</td><td>1</td><td>11</td></tr> <tr><td>Totals</td><td>165</td><td>273</td><td>33</td><td></td></tr> </table>	Cars	160	268	32	460	Trucks	0	0	0	0	Buses	5	5	1	11	Totals	165	273	33		Peds Cross: \bowtie South Peds: 19 South Entering: 471 South Leg Total: 770
Cars	287																															
Trucks	0																															
Buses	12																															
Totals	299																															
Cars	160	268	32	460																												
Trucks	0	0	0	0																												
Buses	5	5	1	11																												
Totals	165	273	33																													

Comments

Accu-Traffic Inc.

Total Count Diagram

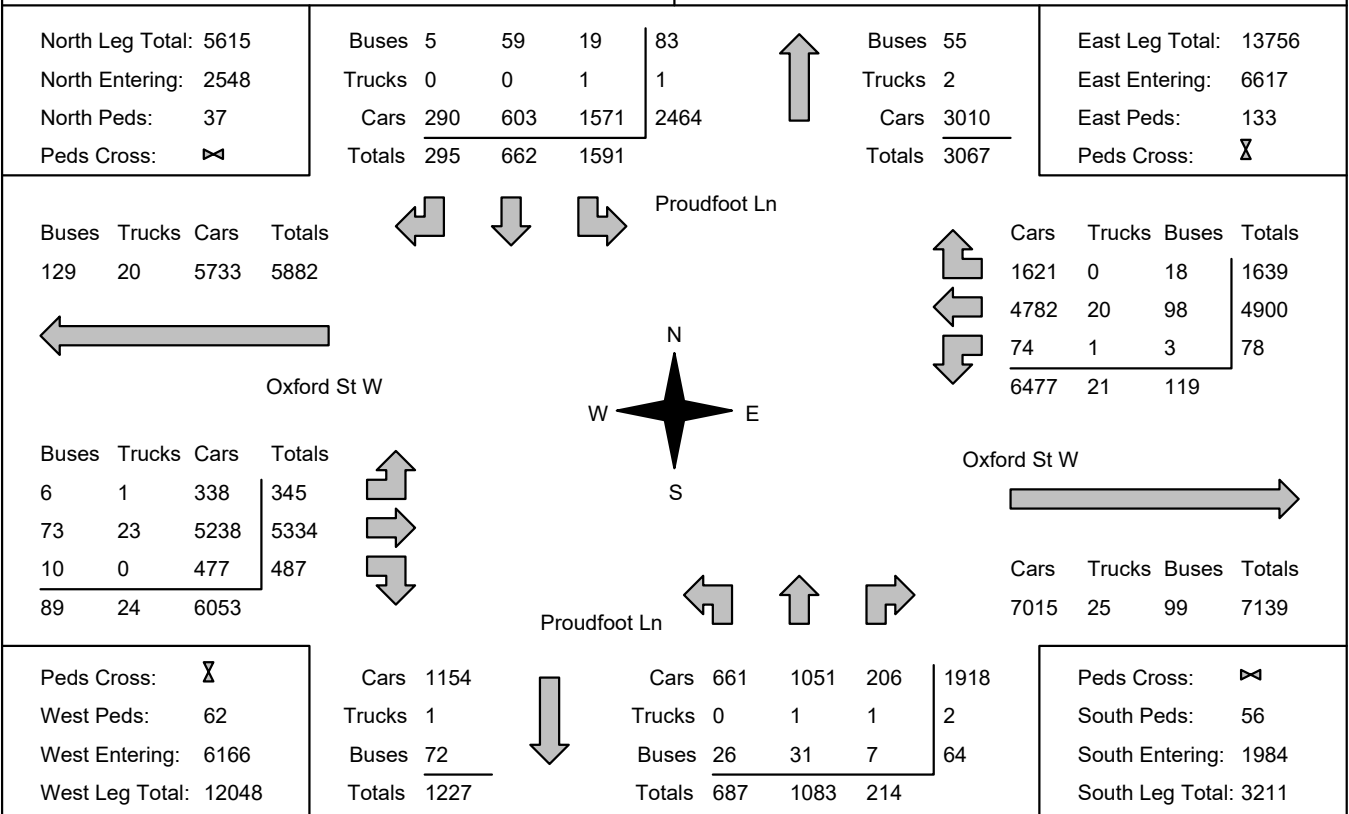
Municipality: London
Site #: 1919300003
Intersection: Oxford St W & Proudfoot Ln
TFR File #: 1
Count date: 27-Nov-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Oxford St W runs W/E



Comments



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Oxford St W & Proudfoot Ln Count Date: 27-Nov-19 Municipality: London

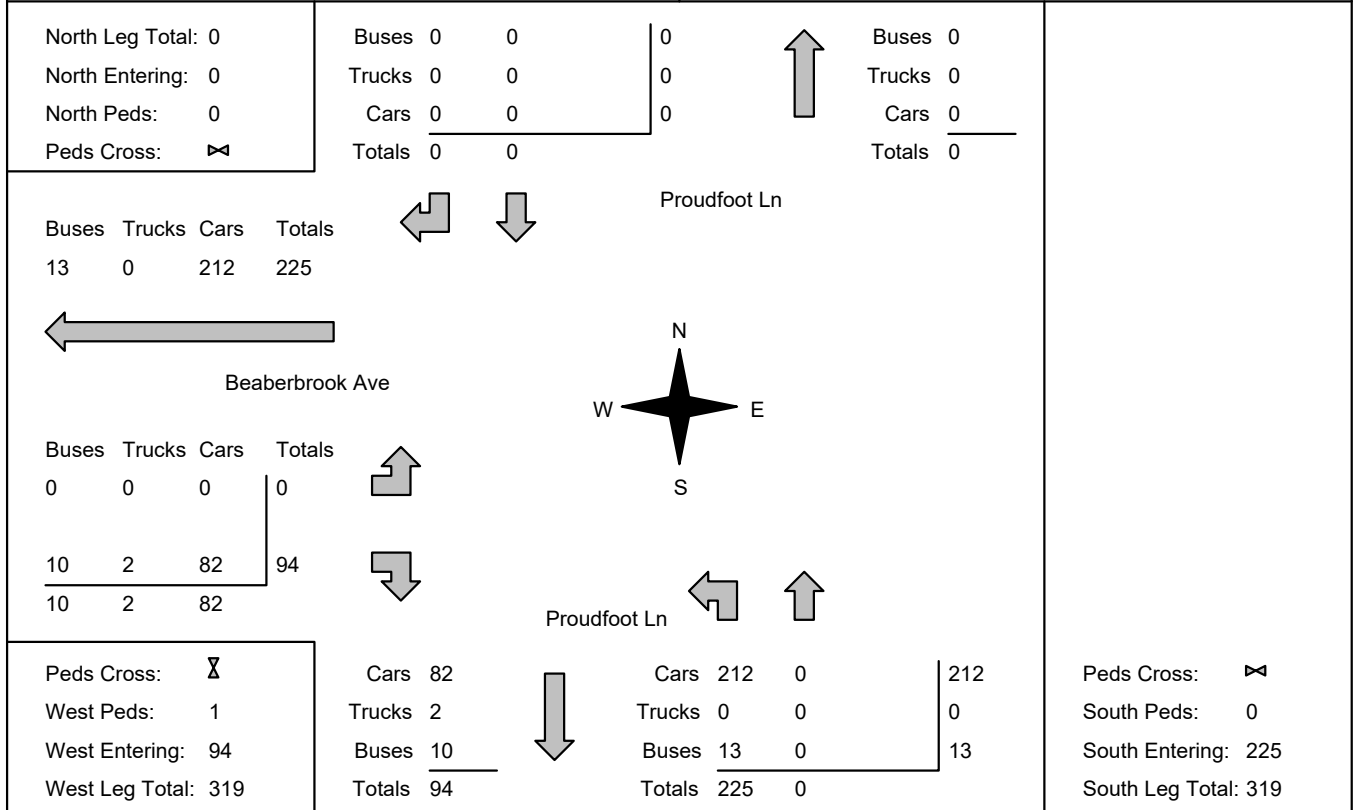
North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	56	15	13	84	0	146	7:00:00	30	29	3	62	3
8:00:00	211	57	39	307	0	513	8:00:00	74	90	42	206	3
9:00:00	306	72	34	412	2	689	9:00:00	99	133	45	277	5
16:00:00	127	35	20	182	1	356	16:00:00	46	92	36	174	0
17:00:00	299	156	66	521	22	989	17:00:00	159	269	40	468	21
18:00:00	278	166	59	503	10	989	18:00:00	167	293	26	486	13
19:00:00	314	161	64	539	2	850	19:00:00	112	177	22	311	11
Totals:	1591	662	295	2548	37	4532	S Totals:	687	1083	214	1984	56
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	5	172	33	210	4	550	7:00:00	9	325	6	340	1
8:00:00	4	478	104	586	9	1657	8:00:00	35	1009	27	1071	2
9:00:00	7	658	177	842	15	2200	9:00:00	69	1233	56	1358	10
16:00:00	11	333	116	460	9	995	16:00:00	36	462	37	535	3
17:00:00	16	1266	445	1727	32	2679	17:00:00	55	770	127	952	31
18:00:00	20	1120	444	1584	34	2541	18:00:00	74	758	125	957	10
19:00:00	15	873	320	1208	30	2161	19:00:00	67	777	109	953	5
Totals:	78	4900	1639	6617	133	12783	W Totals:	345	5334	487	6166	62
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00		17:00	18:00	19:00	0:00			
Crossing Values:	120	386	563	277		790	782	638	0			

Accu-Traffic Inc.

Morning Peak Diagram	Specified Period From: 6:30:00 To: 9:30:00	One Hour Peak From: 8:30:00 To: 9:30:00
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Municipality: London Site #: 1919300004 Intersection: Proudfoot Ln & Beaberbrook Ave TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:
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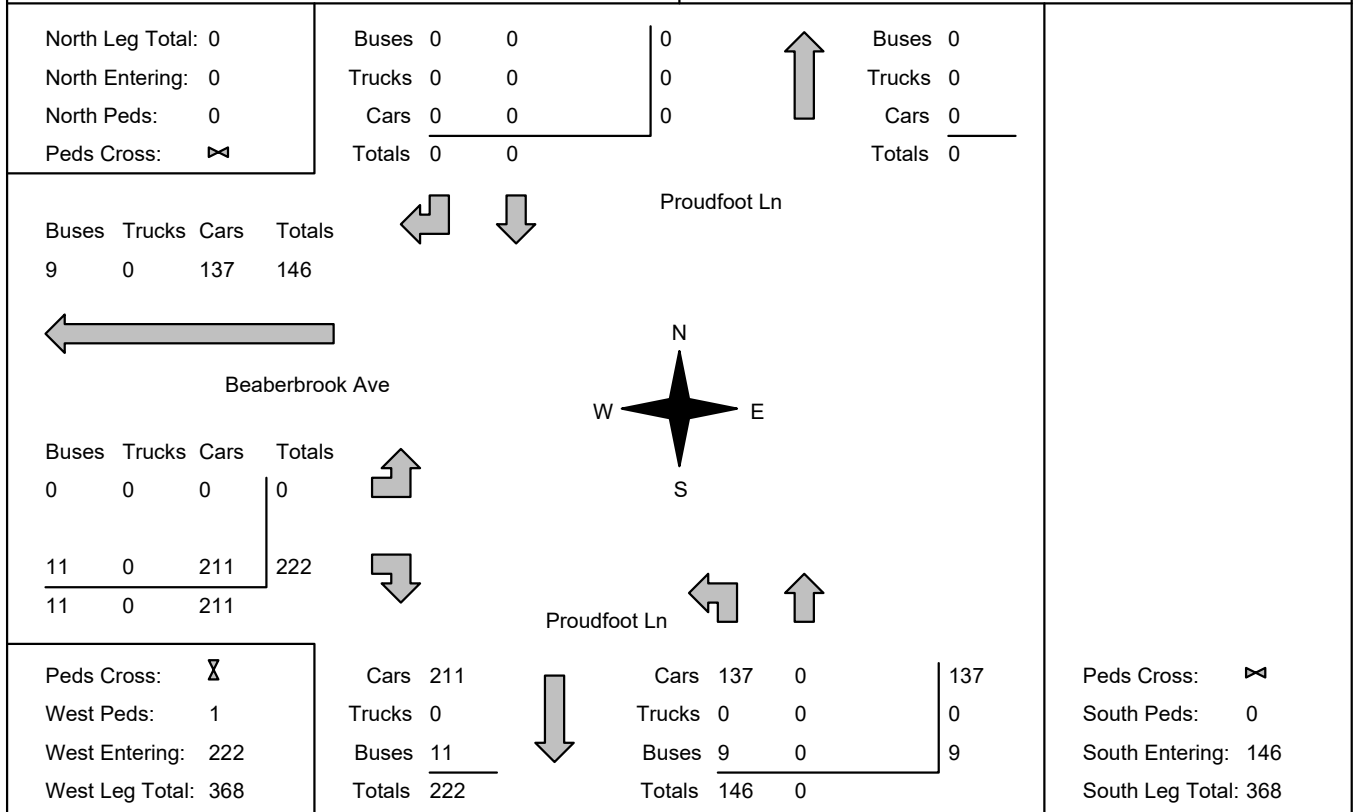
** Non-Signalized Intersection **	Major Road: Proudfoot Ln runs N/S
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Comments

Accu-Traffic Inc.

Afternoon Peak Diagram	Specified Period From: 16:00:00 To: 19:00:00	One Hour Peak From: 16:00:00 To: 17:00:00
Municipality: London Site #: 1919300004 Intersection: Proudfoot Ln & Beaberbrook Ave TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:	
** Non-Signalized Intersection **		Major Road: Proudfoot Ln runs N/S



Comments

Accu-Traffic Inc.

Total Count Diagram

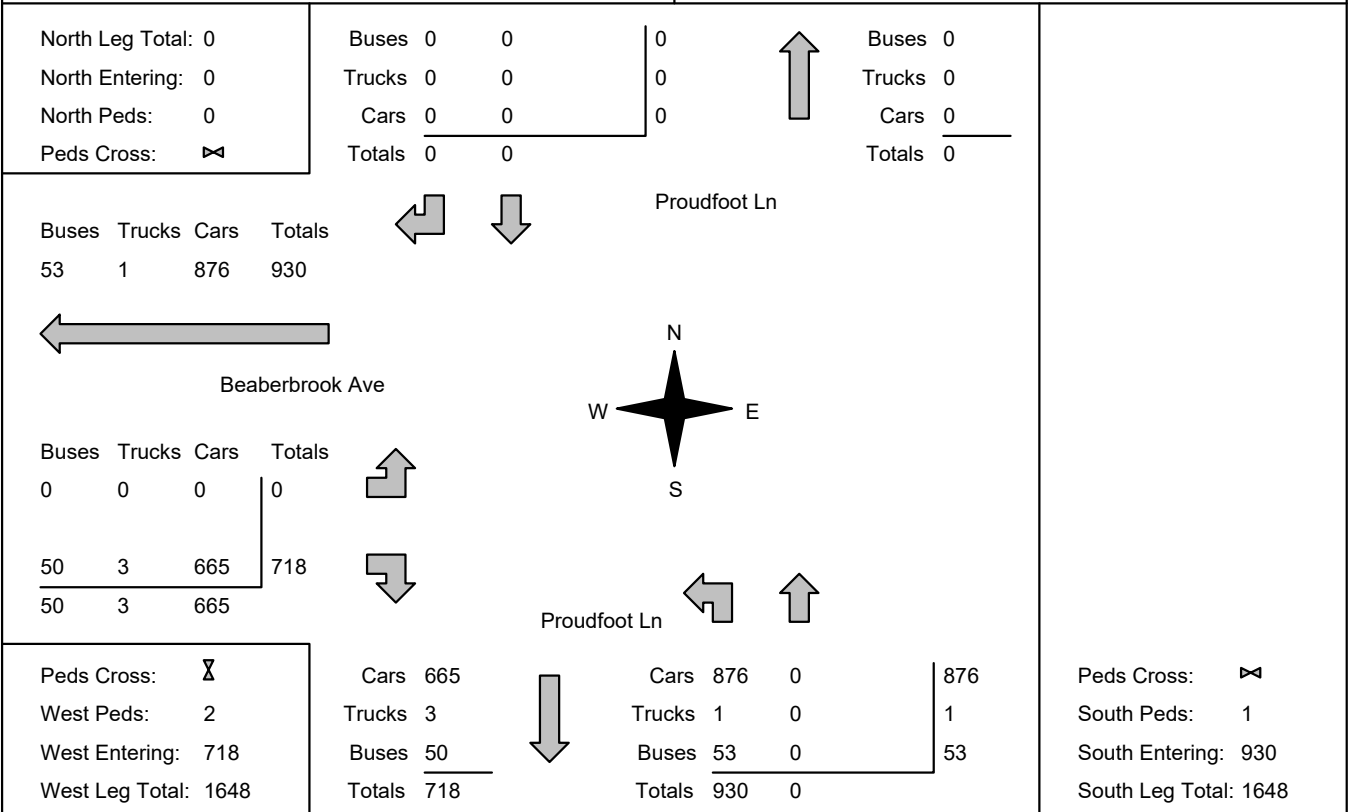
Municipality: London
Site #: 1919300004
Intersection: Proudfoot Ln & Beaverbrook Ave
TFR File #: 1
Count date: 27-Nov-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Proudfoot Ln runs N/S



Comments



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Proudfoot Ln & Beaverbrook Ave Count Date: 27-Nov-19 Municipality: London


North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	38	7:00:00	38	0	0	38	0
8:00:00	0	0	0	0	0	173	8:00:00	173	0	0	173	0
9:00:00	0	0	0	0	0	236	9:00:00	236	0	0	236	0
16:00:00	0	0	0	0	0	94	16:00:00	94	0	0	94	0
17:00:00	0	0	0	0	0	146	17:00:00	146	0	0	146	0
18:00:00	0	0	0	0	0	123	18:00:00	123	0	0	123	1
19:00:00	0	0	0	0	0	120	19:00:00	120	0	0	120	0
Totals:	0	0	0	0	0	930	S Totals:	930	0	0	930	1
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	17	7:00:00	0	0	17	17	0
8:00:00	0	0	0	0	0	42	8:00:00	0	0	42	42	0
9:00:00	0	0	0	0	0	71	9:00:00	0	0	71	71	1
16:00:00	0	0	0	0	0	55	16:00:00	0	0	55	55	0
17:00:00	0	0	0	0	0	222	17:00:00	0	0	222	222	1
18:00:00	0	0	0	0	0	145	18:00:00	0	0	145	145	0
19:00:00	0	0	0	0	0	166	19:00:00	0	0	166	166	0
Totals:	0	0	0	0	0	718	W Totals:	0	0	718	718	2
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00		17:00	18:00	19:00	0:00			
Crossing Values:	0	0	0	0		0	1	0	0			

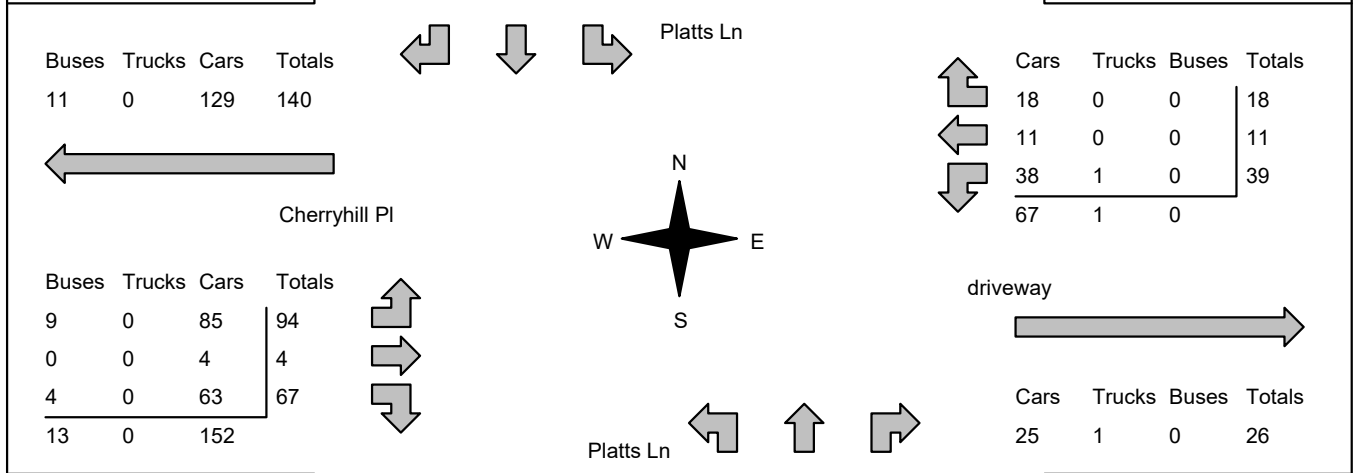
Accu-Traffic Inc.


Morning Peak Diagram	Specified Period From: 6:30:00 To: 9:30:00	One Hour Peak From: 8:15:00 To: 9:15:00
-----------------------------	---	--

Municipality: London Site #: 1919300005 Intersection: Platts Ln & Cherryhill PI TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:
--	---

** Non-Signalized Intersection **	Major Road: Platts Ln runs N/S
--	---------------------------------------

North Leg Total: 769 North Entering: 379 North Peds: 11 Peds Cross: \times	<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>7</td><td>12</td><td>0</td><td style="border-left: 1px solid black;">19</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Cars</td><td>65</td><td>285</td><td>10</td><td style="border-left: 1px solid black; border-bottom: 1px solid black;">360</td></tr> <tr><td>Totals</td><td>72</td><td>297</td><td>10</td><td style="border-left: 1px solid black;"></td></tr> </table>	Buses	7	12	0	19	Trucks	0	0	0	0	Cars	65	285	10	360	Totals	72	297	10			<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>19</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Cars</td><td style="border-bottom: 1px solid black;">370</td></tr> <tr><td>Totals</td><td>390</td></tr> </table>	Buses	19	Trucks	1	Cars	370	Totals	390	East Leg Total: 94 East Entering: 68 East Peds: 20 Peds Cross: \times
Buses	7	12	0	19																												
Trucks	0	0	0	0																												
Cars	65	285	10	360																												
Totals	72	297	10																													
Buses	19																															
Trucks	1																															
Cars	370																															
Totals	390																															



Peds Cross: \times West Peds: 16 West Entering: 165 West Leg Total: 305	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>386</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Buses</td><td style="border-bottom: 1px solid black;">16</td></tr> <tr><td>Totals</td><td>403</td></tr> </table>	Cars	386	Trucks	1	Buses	16	Totals	403		<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>53</td><td>267</td><td>11</td><td style="border-left: 1px solid black;">331</td></tr> <tr><td>Trucks</td><td>0</td><td>1</td><td>1</td><td style="border-left: 1px solid black;">2</td></tr> <tr><td>Buses</td><td>4</td><td>10</td><td>0</td><td style="border-left: 1px solid black; border-bottom: 1px solid black;">14</td></tr> <tr><td>Totals</td><td>57</td><td>278</td><td>12</td><td style="border-left: 1px solid black;"></td></tr> </table>	Cars	53	267	11	331	Trucks	0	1	1	2	Buses	4	10	0	14	Totals	57	278	12		Peds Cross: \times South Peds: 25 South Entering: 347 South Leg Total: 750
Cars	386																															
Trucks	1																															
Buses	16																															
Totals	403																															
Cars	53	267	11	331																												
Trucks	0	1	1	2																												
Buses	4	10	0	14																												
Totals	57	278	12																													

Comments

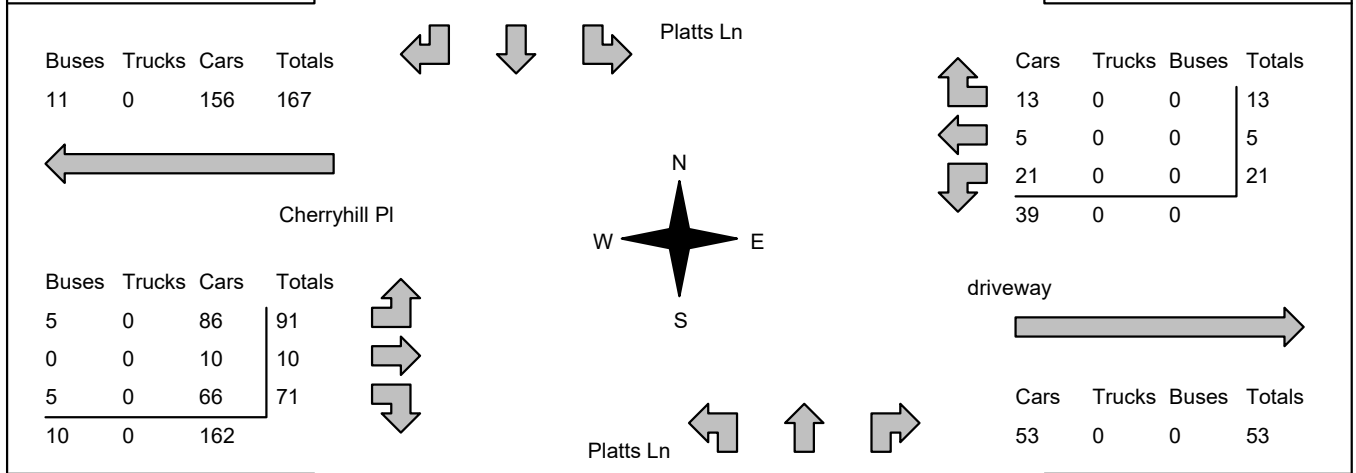
Accu-Traffic Inc.

Afternoon Peak Diagram	Specified Period From: 16:00:00 To: 19:00:00	One Hour Peak From: 16:00:00 To: 17:00:00
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Municipality: London Site #: 1919300005 Intersection: Platts Ln & Cherryhill PI TFR File #: 1 Count date: 27-Nov-19	Weather conditions: Person counted: Person prepared: Person checked:
--	---

** Non-Signalized Intersection **	Major Road: Platts Ln runs N/S
--	---------------------------------------

North Leg Total: 888 North Entering: 515 North Peds: 20 Peds Cross: \bowtie	<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>4</td><td>7</td><td>0</td><td>11</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Cars</td><td>80</td><td>412</td><td>12</td><td>504</td></tr> <tr><td>Totals</td><td>84</td><td>419</td><td>12</td><td></td></tr> </table>	Buses	4	7	0	11	Trucks	0	0	0	0	Cars	80	412	12	504	Totals	84	419	12		↑	<table style="border-collapse: collapse;"> <tr><td>Buses</td><td>13</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>360</td></tr> <tr><td>Totals</td><td>373</td></tr> </table>	Buses	13	Trucks	0	Cars	360	Totals	373	East Leg Total: 92 East Entering: 39 East Peds: 19 Peds Cross: \bowtie
Buses	4	7	0	11																												
Trucks	0	0	0	0																												
Cars	80	412	12	504																												
Totals	84	419	12																													
Buses	13																															
Trucks	0																															
Cars	360																															
Totals	373																															



Peds Cross: \bowtie West Peds: 35 West Entering: 172 West Leg Total: 339	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>499</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Buses</td><td>12</td></tr> <tr><td>Totals</td><td>511</td></tr> </table>	Cars	499	Trucks	0	Buses	12	Totals	511	↓	<table style="border-collapse: collapse;"> <tr><td>Cars</td><td>71</td><td>261</td><td>31</td><td>363</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>Buses</td><td>7</td><td>8</td><td>0</td><td>15</td></tr> <tr><td>Totals</td><td>78</td><td>269</td><td>31</td><td></td></tr> </table>	Cars	71	261	31	363	Trucks	0	0	0	0	Buses	7	8	0	15	Totals	78	269	31		Peds Cross: \bowtie South Peds: 23 South Entering: 378 South Leg Total: 889
Cars	499																															
Trucks	0																															
Buses	12																															
Totals	511																															
Cars	71	261	31	363																												
Trucks	0	0	0	0																												
Buses	7	8	0	15																												
Totals	78	269	31																													

Comments

Accu-Traffic Inc.

Total Count Diagram

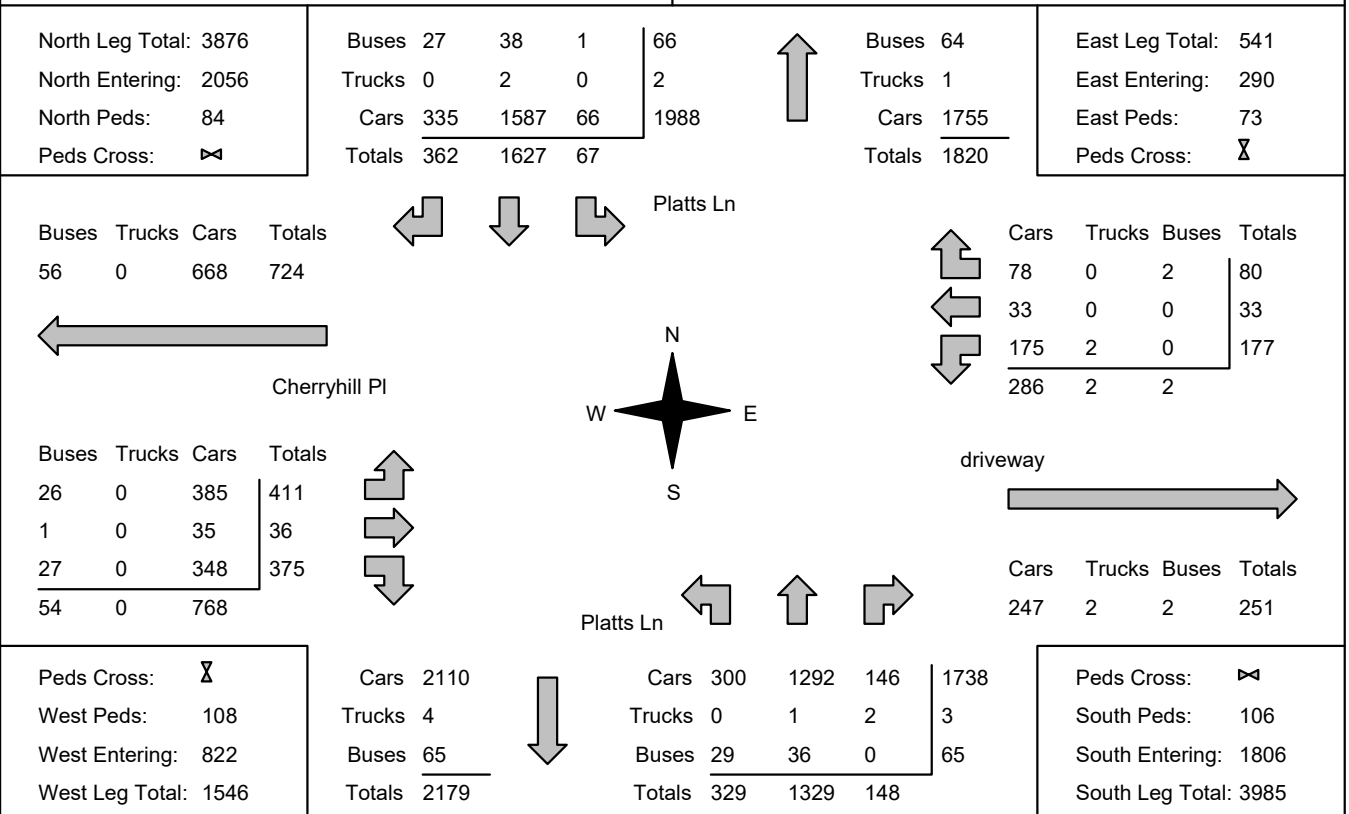
Municipality: London
Site #: 1919300005
Intersection: Platts Ln & Cherryhill PI
TFR File #: 1
Count date: 27-Nov-19

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Platts Ln runs N/S



Comments



Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: **Platts Ln & Cherryhill PI** Count Date: **27-Nov-19** Municipality: **London**

North Approach Totals						North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	1	32	4	37	1	82	7:00:00	10	34	1	45	0
8:00:00	5	161	26	192	13	379	8:00:00	22	154	11	187	6
9:00:00	11	294	71	376	10	731	9:00:00	54	291	10	355	20
16:00:00	5	134	35	174	5	338	16:00:00	20	135	9	164	14
17:00:00	12	419	84	515	20	893	17:00:00	78	269	31	378	23
18:00:00	10	319	95	424	22	797	18:00:00	84	239	50	373	21
19:00:00	23	268	47	338	13	642	19:00:00	61	207	36	304	22
Totals:	67	1627	362	2056	84	3862	S Totals:	329	1329	148	1806	106
East Approach Totals						East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Buses				Total Peds		Hour Ending	Includes Cars, Trucks, & Buses				Total Peds
	Left	Thru	Right	Grand Total				Left	Thru	Right	Grand Total	
7:00:00	6	1	2	9	1	31	7:00:00	4	0	18	22	2
8:00:00	44	1	17	62	8	184	8:00:00	40	2	80	122	12
9:00:00	41	5	15	61	15	211	9:00:00	89	2	59	150	13
16:00:00	19	10	8	37	12	132	16:00:00	43	8	44	95	12
17:00:00	21	5	13	39	19	211	17:00:00	91	10	71	172	35
18:00:00	24	2	14	40	11	165	18:00:00	71	6	48	125	29
19:00:00	22	9	11	42	7	178	19:00:00	73	8	55	136	5
Totals:	177	33	80	290	73	1112	W Totals:	411	36	375	822	108
Calculated Values for Traffic Crossing Major Street												
Hours Ending:	7:00	8:00	9:00	16:00			17:00	18:00	19:00	0:00		
Crossing Values:	12	105	165	91			165	144	139	0		



Turning Movements Report - AM Period

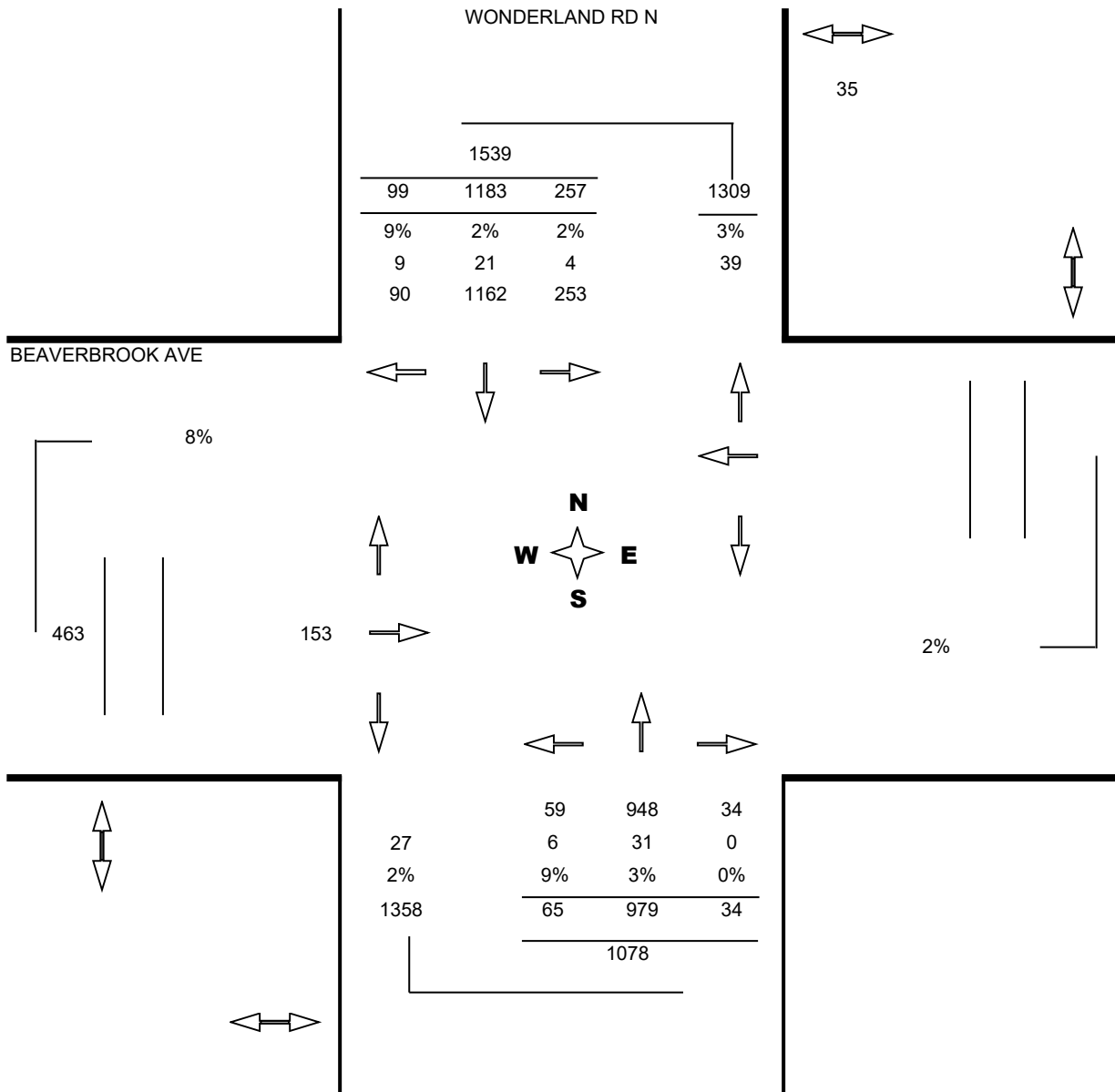
Location..... BEAVERBROOK AVE @ WONDERLAND RD N

Municipality..... LONDON

GeoID..... INT2684

Count Date..... Tuesday, 24 October, 2017

Peak Hour..... 07:45 AM — 08:45 AM





Turning Movements Report - MD Period

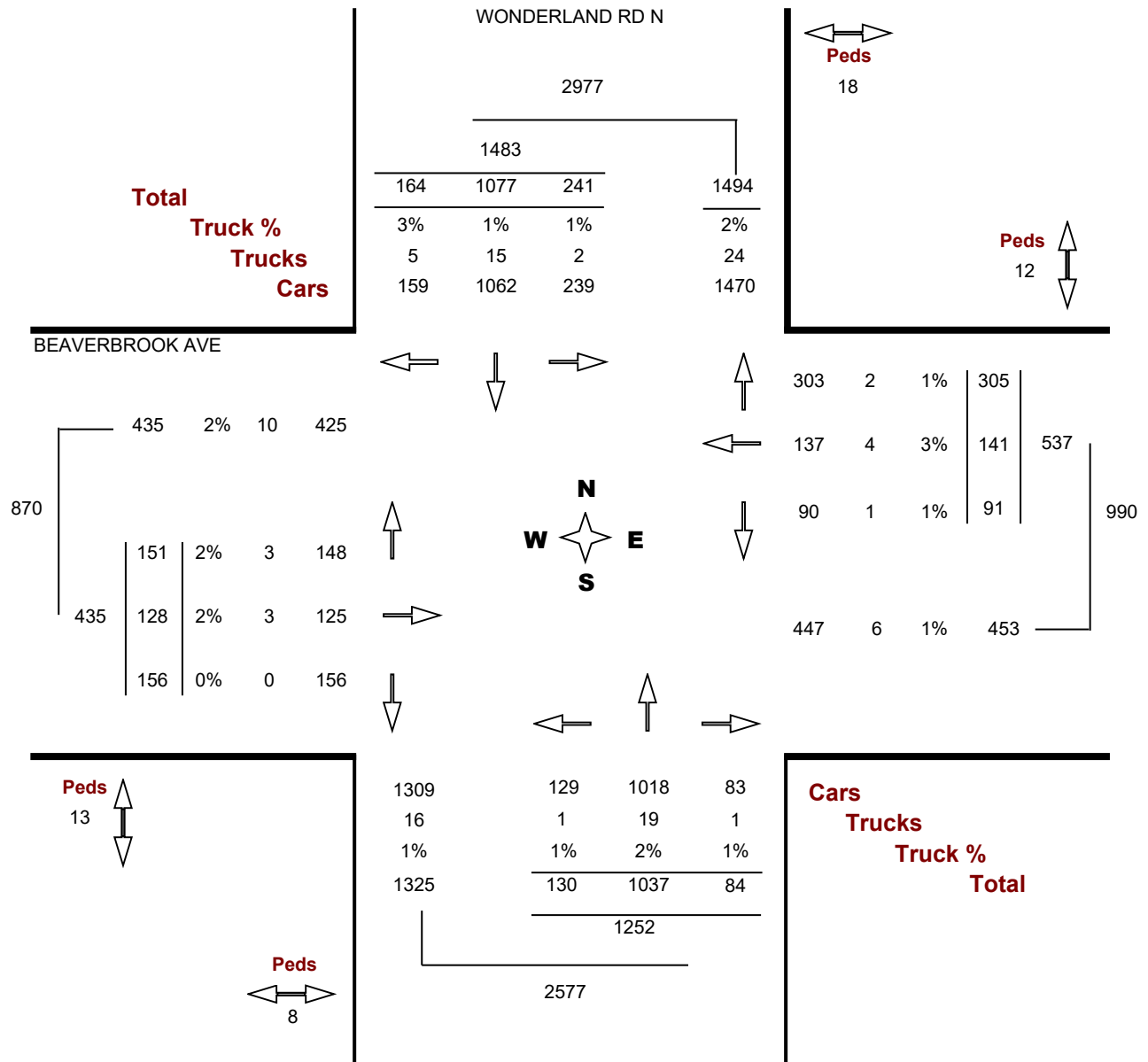
Location..... BEAVERBROOK AVE @ WONDERLAND RD N

Municipality..... LONDON

GeoID..... INT2684

Count Date..... Tuesday, 24 October, 2017

Peak Hour..... 12:00 PM — 01:00 PM





Turning Movements Report - PM Period

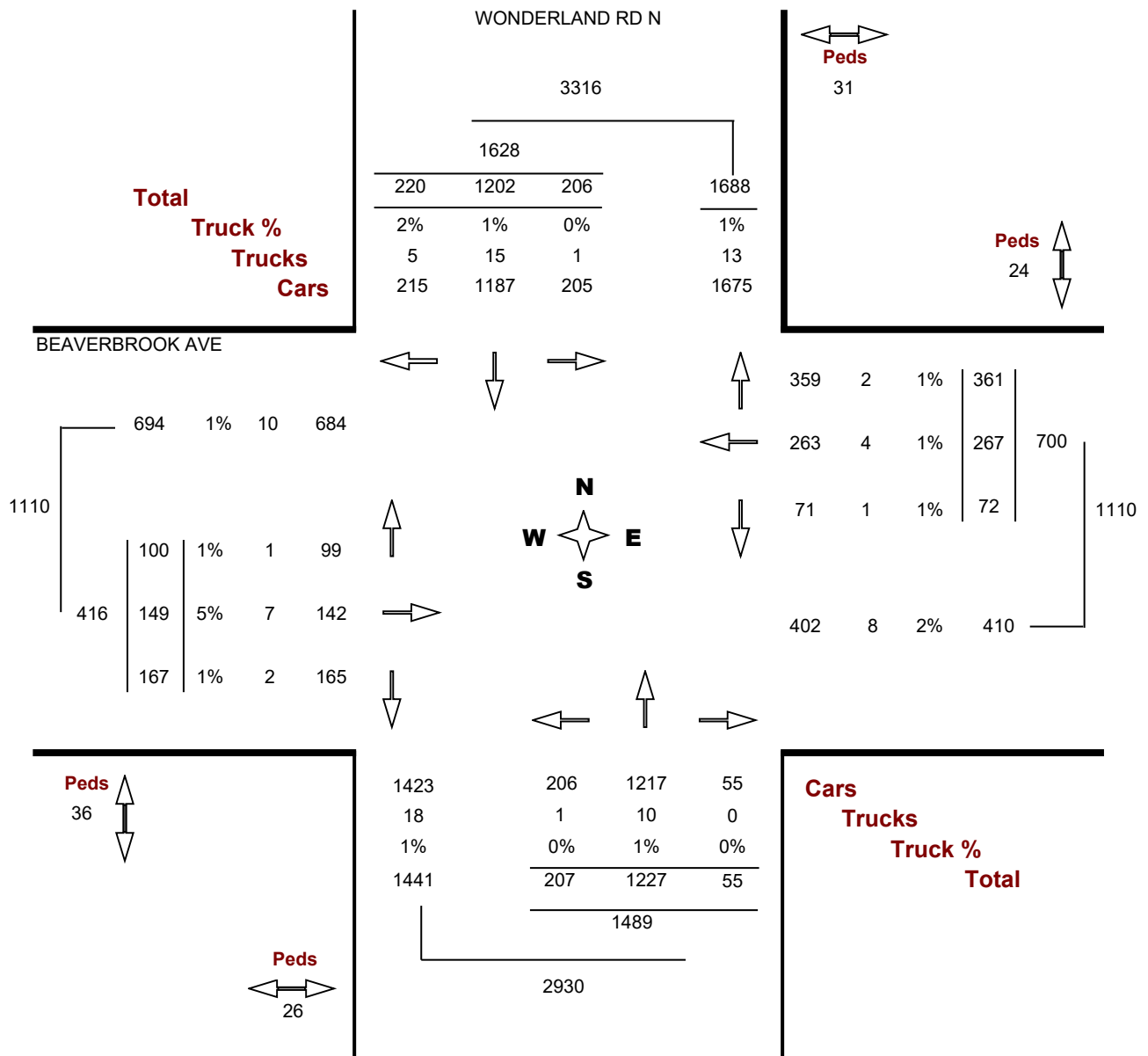
Location..... BEAVERBROOK AVE @ WONDERLAND RD N

Municipality..... LONDON

GeoID..... INT2684

Count Date..... Tuesday, 24 October, 2017

Peak Hour..... 04:15 PM — 05:15 PM





SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

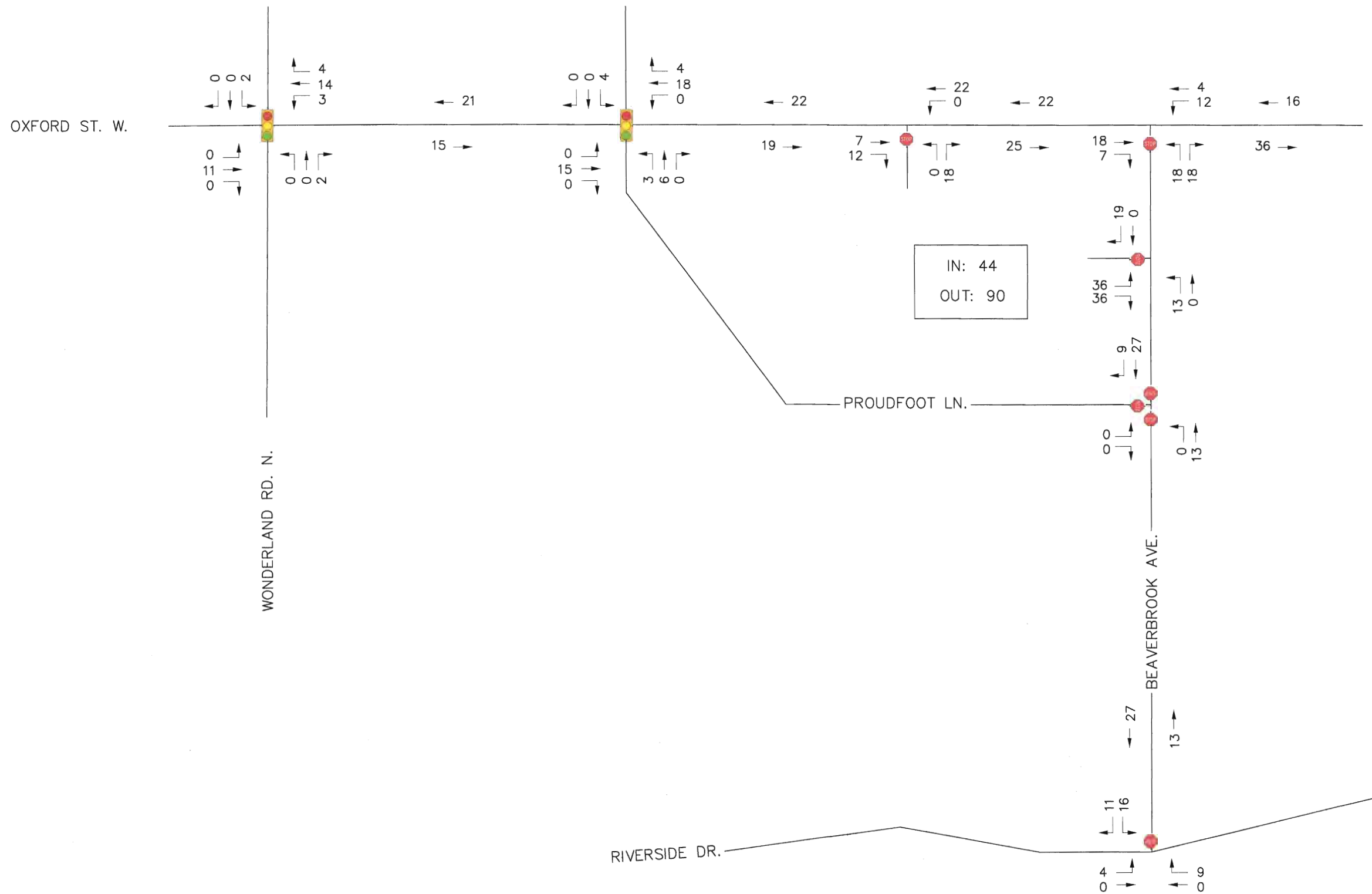
APPENDIX E

Background Developments



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON



RC SPENCER ASSOCIATES INC.
 Consulting Engineers
 Windsor: 800 University Ave. W. - Windsor ON N9A 5R9
 Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4
 Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

Professional Engineers
 Ontario

DESIGN	A.D.B.
CHECKED	J.T.
DRAWN	R.L.B.
CHECKED	A.D.B.
1. COMPLETED REPORT FIGURES	JAN 2 2019 R.L.B. A.D.B.
NO.	REVISION
	DATE
	BY
	APP
	SCALE
	N.T.S.

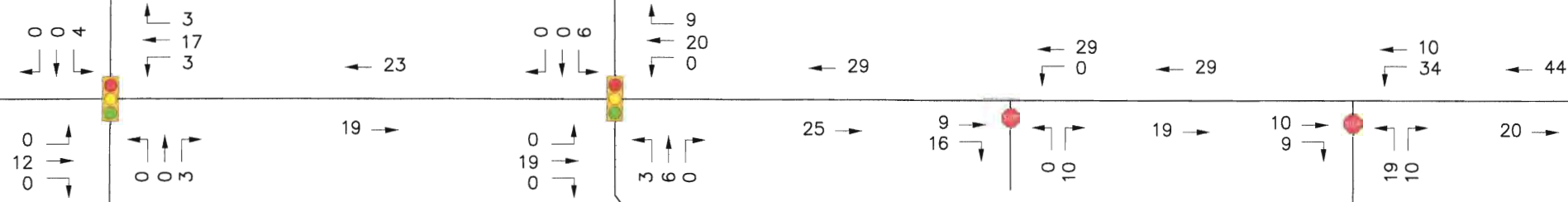
OXFORD/BEAVERBROOK DEVELOPMENT - T.I.S.

**SITE GENERATED TRAFFIC
(AM PEAK HOUR)**

PROJECT NO.	18-823
FIGURE NO.	4A
OF	7



OXFORD ST. W.



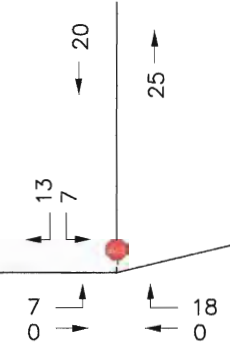
WONDERLAND RD. N.

PROUDFOOT LN.

IN: 84
OUT: 68

BEAVERBROOK AVE.

RIVERSIDE DR.



MC SPENCER ASSOCIATES INC.
Consulting Engineers
Windsor 650 University Ave. W. - Windsor ON N9A 5S9
Leamington 18 Talbot St. W. - Leamington ON N8H 1M4
Chatham-Kent 138 King St. W. Unit 102 - Chatham ON N7M 1E3

Professional Engineers
Ontario

DESIGN	A.D.B.
CHECKED	J.T.
DRAWN	R.L.B.
CHECKED	A.D.B.
DATE	JAN 2019
SCALE	N.T.S.
NO.	REVISION
	DATE
	BY
	APP

OXFORD/BEAVERBROOK DEVELOPMENT - T.I.S.

**SITE GENERATED TRAFFIC
(PM PEAK HOUR)**

PROJECT NO.
18-823

FIGURE NO.
4B

OF
7

APPENDIX F


Synchro Capacity Analysis



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

Timings
1: Wonderland Road & Beaverbrook Avenue
Existing AM Peak Hour
05/28/2021

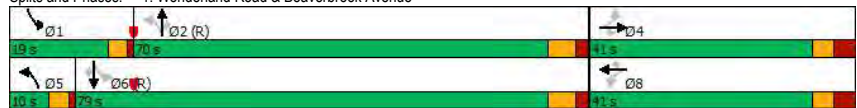


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↓	↑	↑	↓	↓	↓	↑	↑	↑	↓	↓	↓
Traffic Volume (vph)	152	153	143	26	51	170	65	979	34	253	1162	90
Future Volume (vph)	152	153	143	26	51	170	65	979	34	253	1162	90
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			5	2		1	6
Permitted Phases		4		4	8		8	2		2	6	6
Detector Phase		4		4	8		8	8		2	1	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	41.0	41.0	41.0	41.0	41.0	41.0	10.0	70.0	70.0	19.0	79.0	79.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	7.7%	53.8%	53.8%	14.6%	60.8%	60.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	24.5	24.5	24.5	24.5	24.5	24.5	83.9	74.8	74.8	94.8	83.7	83.7
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.65	0.58	0.58	0.73	0.64	0.64
v/c Ratio	0.73	0.49	0.40	0.16	0.16	0.44	0.28	0.54	0.04	0.72	0.56	0.11
Control Delay	66.7	50.4	12.6	27.0	27.3	11.8	10.1	20.1	0.1	20.0	16.0	4.0
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	66.7	50.4	12.6	27.0	27.3	11.8	10.1	20.1	0.1	20.0	16.0	4.0
LOS	E	D	B	C	C	B	B	C	A	B	B	A
Approach Delay		43.9			16.6			18.8			16.0	
Approach LOS		D			B			B			B	

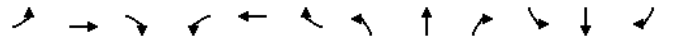
Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 43 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 20.8
 Intersection LOS: C
 Intersection Capacity Utilization 79.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 1: Wonderland Road & Beaverbrook Avenue



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Existing AM Peak Hour
05/28/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↓	↑	↑	↓	↓	↓	↑	↑	↑	↓	↓	↓
Traffic Volume (vph)	152	153	143	26	51	170	65	979	34	253	1162	90
Future Volume (vph)	152	153	143	26	51	170	65	979	34	253	1162	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.94
Ftbp, ped/bikes	0.96	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1588	1807	1478	1664	1773	1436	1530	3433	1422	1650	3500	1286
Fit Permitted	0.72	1.00	1.00	0.55	1.00	1.00	0.18	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	1206	1807	1478	955	1773	1436	292	3433	1422	333	3500	1286
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	166	155	28	55	185	71	1064	37	275	1263	98
RTOR Reduction (vph)	0	0	107	0	0	150	0	16	0	0	0	30
Lane Group Flow (vph)	165	166	48	28	55	35	71	1064	21	275	1263	68
Conf. Peds. (#/hr)	35		14	14		35	17		15	15		17
Heavy Vehicles (%)	2%	4%	5%	0%	6%	3%	10%	4%	0%	2%	2%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases		4		4	8		8	2		2	6	6
Actuated Green, G (s)	24.5	24.5	24.5	24.5	24.5	24.5	80.4	74.8	74.8	92.5	82.9	82.9
Effective Green, g (s)	24.5	24.5	24.5	24.5	24.5	24.5	80.4	74.8	74.8	92.5	82.9	82.9
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.62	0.58	0.58	0.71	0.64	0.64
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	227	340	278	179	334	270	233	1975	818	375	2231	820
v/s Ratio Prot		0.09			0.03		0.01	0.31		c0.08	0.36	
v/s Ratio Perm	c0.14		0.03	0.03		0.02	0.17		0.01	c0.44		0.05
v/c Ratio	0.73	0.49	0.17	0.16	0.16	0.13	0.30	0.54	0.03	0.73	0.57	0.08
Uniform Delay, d1	49.6	47.1	44.2	44.1	44.2	43.9	10.8	17.0	11.9	11.3	13.4	9.0
Progression Factor	1.00	1.00	1.00	0.62	0.64	1.57	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.0	1.1	0.3	0.4	0.2	0.2	0.7	1.1	0.1	7.2	1.0	0.2
Delay (s)	60.6	48.3	44.5	27.9	28.5	69.2	11.5	18.0	12.0	18.5	14.4	9.2
Level of Service	E	D	D	C	C	E	B	B	B	B	B	A
Approach Delay (s)		51.3			56.5			17.5			14.8	
Approach LOS		D			E			B			B	
Intersection Summary												
HCM 2000 Control Delay	23.8			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.75											
Actuated Cycle Length (s)	130.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	79.0%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

Timings
3: Proudfoot Lane & Oxford Street West

Existing AM Peak Hour
05/28/2021

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↕	↔	↕	↔	↕	↕	↔	↕	↕
Traffic Volume (vph)	69	1233	7	658	177	99	133	45	306	72
Future Volume (vph)	69	1233	7	658	177	99	133	45	306	72
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA
Protected Phases	2	2	6	6	3	4	4	4	3	8
Permitted Phases	2	2	6	6	3	4	4	4	3	8
Detector Phase	2	2	6	6	3	4	4	4	3	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	69.0	69.0	69.0	69.0	28.0	33.0	33.0	33.0	28.0	61.0
Total Split (%)	53.1%	53.1%	53.1%	53.1%	21.5%	25.4%	25.4%	25.4%	21.5%	46.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
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)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4
Lead/Lag					Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effect Green (s)	74.2	74.2	74.2	74.2	98.6	17.0	17.0	17.0	46.2	43.8
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.76	0.13	0.13	0.13	0.36	0.34
v/c Ratio	0.20	0.71	0.06	0.35	0.16	0.67	0.59	0.20	0.74	0.20
Control Delay	17.6	24.1	18.1	20.8	5.7	73.9	62.2	11.0	48.5	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	24.1	18.1	20.8	5.7	73.9	62.2	11.0	48.5	27.1
LOS	B	C	B	C	A	E	E	B	D	C
Approach Delay		23.8		17.6				58.1		43.0
Approach LOS		C		B				E		D

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 43 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 28.0

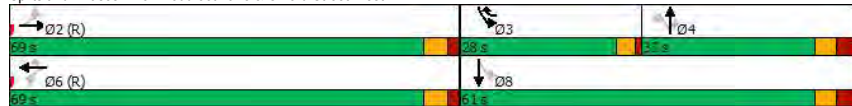
Intersection LOS: C

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Existing AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↕	↕	↔	↕	↕	↕
Traffic Volume (vph)	69	1233	56	7	658	177	99	133	45	306	72	34
Future Volume (vph)	69	1233	56	7	658	177	99	133	45	306	72	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4		
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99	1.00	0.99
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99
Frt	1.00	0.99	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00	0.95
Fit Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	1681	3270	1517	3368	1419	1605	1792	1384	1640	1553		
Fit Permitted	0.35	1.00	0.12	1.00	1.00	0.69	1.00	1.00	0.45	1.00		
Satd. Flow (perm)	620	3270	197	3368	1419	1160	1792	1384	778	1553		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	71	1271	58	7	678	182	102	137	46	315	74	35
RTOR Reduction (vph)	0	2	0	0	44	0	0	40	0	15	0	15
Lane Group Flow (vph)	71	1327	0	7	678	138	102	137	6	315	94	0
Confl. Peds. (#/hr)	2		5	5		2	10		15	15		10
Heavy Vehicles (%)	0%	2%	6%	15%	6%	4%	6%	6%	5%	2%	19%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA		
Protected Phases	2	2	6	6	3	4	4	4	3	8		
Permitted Phases	2	2	6	6	3	4	4	4	3	8		
Actuated Green, G (s)	74.2	74.2	74.2	74.2	96.9	17.1	17.1	17.1	43.8	43.8		
Effective Green, g (s)	74.2	74.2	74.2	74.2	96.9	17.1	17.1	17.1	43.8	43.8		
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.75	0.13	0.13	0.13	0.34	0.34		
Clearance Time (s)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4		
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)	353	1866		112	1922	1057	152	235	182	412	523	
v/s Ratio Prot		c0.41			0.20	0.02		0.08		c0.13	0.06	
v/s Ratio Perm	0.11		0.04		0.07	0.09		0.00		c0.12		
v/c Ratio	0.20	0.71	0.06	0.35	0.13	0.67	0.58	0.03	0.76	0.18		
Uniform Delay, d1	13.5	20.2	12.4	15.0	4.7	53.8	53.1	49.2	35.6	30.4		
Progression Factor	1.00	1.00	1.03	1.26	6.93	1.00	1.00	1.00	1.20	1.19		
Incremental Delay, d2	1.3	2.3	1.0	0.5	0.1	11.1	3.7	0.1	7.2	0.1		
Delay (s)	14.8	22.5	13.8	19.3	32.4	64.8	56.8	49.3	49.9	36.2		
Level of Service	B	C	B	B	C	E	E	D	D	D		
Approach Delay (s)		22.1			22.0		58.4			46.4		
Approach LOS		C			C		E			D		

Intersection Summary

HCM 2000 Control Delay 29.0 HCM 2000 Level of Service C

HCM 2000 Volume to Capacity ratio 0.75

Actuated Cycle Length (s) 130.0 Sum of lost time (s) 16.0

Intersection Capacity Utilization 87.0% ICU Level of Service E

Analysis Period (min) 15

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Existing AM Peak Hour
05/28/2021

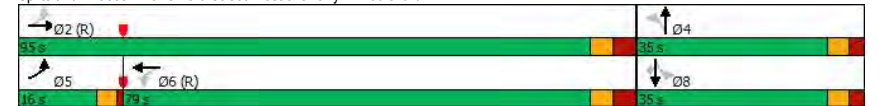
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↓	↑↑	↓	↑	
Traffic Volume (veh/h)	1493	18	67	821	2	181	
Future Volume (Veh/h)	1493	18	67	821	2	181	
Sign Control	Free		Free	Stop			
Grade	0%		0%	0%			
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Hourly flow rate (vph)	1508	18	68	829	2	183	
Pedestrians				7			
Lane Width (m)				3.3			
Walking Speed (m/s)				1.1			
Percent Blockage				1			
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (m)				308			
pX, platoon unblocked				0.92			
vC, conflicting volume			1533	2074	770		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1533	1998	770		
tC, single (s)			4.4	6.8	7.1		
tC, 2 stage (s)							
tF (s)			2.4	3.5	3.4		
p0 queue free %			82	95	44		
cM capacity (veh/h)			370	40	329		
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1005	521	68	414	414	2	183
Volume Left	0	0	68	0	0	2	0
Volume Right	0	18	0	0	0	0	183
cSH	1700	1700	370	1700	1700	40	329
Volume to Capacity	0.59	0.31	0.18	0.24	0.24	0.05	0.56
Queue Length 95th (m)	0.0	0.0	5.0	0.0	0.0	1.2	24.4
Control Delay (s)	0.0	0.0	16.9	0.0	0.0	99.3	28.9
Lane LOS			C			F	D
Approach Delay (s)	0.0		1.3			29.7	
Approach LOS						D	
Intersection Summary							
Average Delay			2.5				
Intersection Capacity Utilization			59.2%		ICU Level of Service		B
Analysis Period (min)			15				

Timings
5: Oxford Street West & Cherryhill Boulevard

Existing AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↓	↑↑	↓	↑↑	↓	↑	↓	↑	↓
Traffic Volume (vph)	141	1379	26	753	18	3	71	22	102
Future Volume (vph)	141	1379	26	753	18	3	71	22	102
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	16.0	95.0	79.0	79.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	12.3%	73.1%	60.8%	60.8%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	103.3	100.2	87.7	87.7	16.9	16.9	16.9	16.9	16.9
Actuated g/C Ratio	0.79	0.77	0.67	0.67	0.13	0.13	0.13	0.13	0.13
v/c Ratio	0.33	0.61	0.16	0.40	0.13	0.08	0.50	0.10	0.41
Control Delay	4.5	5.3	13.8	11.3	47.3	22.9	61.5	46.3	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.5	5.3	13.8	11.3	47.3	22.9	61.5	46.3	12.5
LOS	A	A	B	B	D	C	E	D	B
Approach Delay		5.3		11.4		36.5		34.1	
Approach LOS		A		B		D		C	
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 91 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 85									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.61									
Intersection Signal Delay: 9.7									
Intersection Capacity Utilization 79.5%									
Analysis Period (min) 15									

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Existing AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	141	1379	81	26	753	50	18	3	12	71	22	102
Future Volume (vph)	141	1379	81	26	753	50	18	3	12	71	22	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	1.00	0.93
Fpfb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.94		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1659	3353		1701	3221		1564	1533		1605	1837	1324
Flt Permitted	0.29	1.00		0.15	1.00		0.74	1.00		0.75	1.00	1.00
Satd. Flow (perm)	498	3353		264	3221		1221	1533		1184	1837	1324
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	153	1499	88	28	818	54	20	3	13	77	24	111
RTOR Reduction (vph)	0	2	0	0	3	0	0	11	0	0	0	97
Lane Group Flow (vph)	153	1585	0	28	869	0	20	5	0	77	24	14
Confl. Peds. (#/hr)	17		11	11		17	42		51	51		42
Heavy Vehicles (%)	11%	2%	5%	0%	6%	8%	6%	0%	0%	6%	0%	13%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		6			4			8		8
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	100.2	100.2		87.7	87.7		16.9	16.9		16.9	16.9	16.9
Effective Green, g (s)	100.2	100.2		87.7	87.7		16.9	16.9		16.9	16.9	16.9
Actuated g/C Ratio	0.77	0.77		0.67	0.67		0.13	0.13		0.13	0.13	0.13
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	459	2584		178	2172		158	199		153	238	172
v/s Ratio Prot	0.02	c0.47		0.27			0.00			0.01		
v/s Ratio Perm	0.23			0.11			0.02			c0.07		0.01
v/c Ratio	0.33	0.61		0.16	0.40		0.13	0.02		0.50	0.10	0.08
Uniform Delay, d1	4.4	6.5		7.7	9.4		50.0	49.3		52.6	49.9	49.7
Progression Factor	0.77	0.58		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.9		1.9	0.6		0.4	0.0		2.6	0.2	0.2
Delay (s)	3.7	4.6		9.6	10.0		50.4	49.4		55.2	50.0	50.0
Level of Service	A	A		A	A		D	D		E	D	D
Approach Delay (s)		4.5			10.0			49.9			51.9	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM 2000 Control Delay	10.3			HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio	0.62											
Actuated Cycle Length (s)	130.0			Sum of lost time (s)				16.9				
Intersection Capacity Utilization	79.5%			ICU Level of Service				D				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

Existing AM Peak Hour
05/28/2021

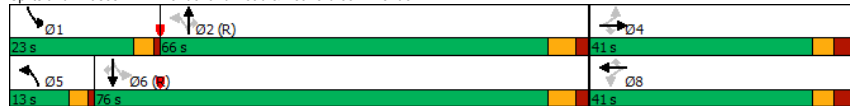
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←	
Traffic Volume (veh/h)	94	4	67	39	11	18	57	278	12	10	297	72	
Future Volume (Veh/h)	94	4	67	39	11	18	57	278	12	10	297	72	
Sign Control		Stop			Stop			Free			Free		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.96	0.92	0.96	0.92	0.92	0.92	0.96	0.96	0.92	0.92	0.96	0.96	
Hourly flow rate (vph)	98	4	70	42	12	20	59	290	13	11	309	75	
Pedestrians	16		20		25		11						
Lane Width (m)	3.7		3.7		3.1		3.5						
Walking Speed (m/s)	1.1		1.1		1.1		1.1						
Percent Blockage	1		2		2		1						
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	830	826	388	862	856	328	400						323
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	830	826	388	862	856	328	400						323
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2						4.1
tC, 2 stage (s)													
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3						2.2
p0 queue free %	59	99	89	80	96	97	95						99
cM capacity (veh/h)	239	281	630	215	270	698	1110						1225
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	172	74	59	303	11	384							
Volume Left	98	42	59	0	11	0							
Volume Right	70	20	0	13	0	75							
cSH	321	276	1110	1700	1225	1700							
Volume to Capacity	0.54	0.27	0.05	0.18	0.01	0.23							
Queue Length 95th (m)	22.7	8.0	1.3	0.0	0.2	0.0							
Control Delay (s)	28.5	22.8	8.4	0.0	8.0	0.0							
Lane LOS	D	C	A	A									
Approach Delay (s)	28.5	22.8	1.4	0.2									
Approach LOS	D	C											
Intersection Summary													
Average Delay	7.1												
Intersection Capacity Utilization	45.2%			ICU Level of Service			A						
Analysis Period (min)	15												

Timings
1: Wonderland Road & Beaverbrook Avenue
Existing PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	100	149	167	72	267	361	207	1217	55	206	1202	220
Future Volume (vph)	100	149	167	72	267	361	207	1217	55	206	1202	220
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		8	5	2		1	6	
Permitted Phases		4		8		8	5	2		2	6	
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	41.0	41.0	41.0	41.0	41.0	41.0	13.0	66.0	66.0	23.0	76.0	76.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	10.0%	50.8%	50.8%	17.7%	58.5%	58.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	26.9	26.9	26.9	26.9	26.9	26.9	85.0	69.8	69.8	89.1	72.9	72.9
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.65	0.54	0.54	0.69	0.56	0.56
v/c Ratio	1.03	0.44	0.42	0.39	0.76	0.80	0.76	0.70	0.08	0.71	0.67	0.30
Control Delay	144.7	47.3	11.0	45.2	54.2	27.0	36.0	26.7	1.1	31.0	22.7	5.5
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	144.7	47.3	11.0	45.2	54.2	27.0	36.0	26.7	1.1	31.0	22.7	5.5
LOS	F	D	B	D	D	C	D	C	A	C	C	A
Approach Delay		56.2			39.3			27.1			21.4	
Approach LOS		E			D			C			C	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 38 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 29.8
 Intersection LOS: C
 Intersection Capacity Utilization 93.4%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 1: Wonderland Road & Beaverbrook Avenue



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Existing PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	100	149	167	72	267	361	207	1217	55	206	1202	220
Future Volume (vph)	100	149	167	72	267	361	207	1217	55	206	1202	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	1.00	0.92	1.00	0.92	1.00
Fipb, ped/bikes	0.98	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1635	1789	1500	1613	1842	1472	1667	3535	1389	1668	3500	1305
Fit Permitted	0.30	1.00	1.00	0.57	1.00	1.00	0.13	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	514	1789	1500	967	1842	1472	233	3535	1389	190	3500	1305
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	162	182	78	290	392	225	1323	60	224	1307	239
RTOR Reduction (vph)	0	0	128	0	186	0	0	28	0	0	0	77
Lane Group Flow (vph)	109	162	54	78	290	206	225	1323	32	224	1307	162
Conf. Peds. (#/hr)	31		26	26		31	36		24	24		36
Heavy Vehicles (%)	1%	5%	2%	2%	2%	1%	1%	1%	0%	1%	2%	3%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8		8	5	2		1	6	
Permitted Phases		4		8		8	5	2		2	6	
Actuated Green, G (s)	26.9	26.9	26.9	26.9	26.9	26.9	82.9	69.8	69.8	89.3	73.0	73.0
Effective Green, g (s)	26.9	26.9	26.9	26.9	26.9	26.9	82.9	69.8	69.8	89.3	73.0	73.0
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.64	0.54	0.54	0.69	0.56	0.56
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	106	370	310	200	381	304	293	1898	745	315	1965	732
v/s Ratio Prot		0.09			0.16		0.08	0.37		c0.09	0.37	
v/s Ratio Perm	c0.21		0.04	0.08		0.14	c0.41		0.02	0.40		0.12
v/c Ratio	1.03	0.44	0.18	0.39	0.76	0.68	0.77	0.70	0.04	0.71	0.67	0.22
Uniform Delay, d1	51.5	45.0	42.4	44.5	48.5	47.6	16.4	22.3	14.3	22.8	19.9	14.3
Progression Factor	1.00	1.00	1.00	0.94	0.90	0.86	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	95.2	0.8	0.3	1.1	7.4	5.0	11.4	2.1	0.1	7.4	1.8	0.7
Delay (s)	146.8	45.8	42.7	43.0	51.1	46.1	27.8	24.4	14.4	30.2	21.7	15.0
Level of Service	F	D	D	D	D	D	C	C	B	C	C	B
Approach Delay (s)		68.8			47.7			24.5			21.9	
Approach LOS		E			D			C			C	

Intersection Summary
 HCM 2000 Control Delay 31.7
 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.82
 Actuated Cycle Length (s) 130.0
 Sum of lost time (s) 17.0
 Intersection Capacity Utilization 93.4%
 ICU Level of Service F
 Analysis Period (min) 15
 c Critical Lane Group

Timings
3: Proudfoot Lane & Oxford Street West

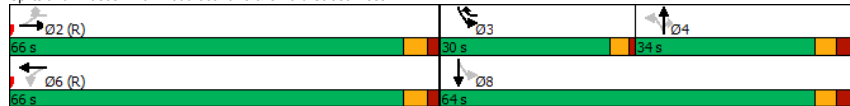
Existing PM Peak Hour
05/28/2021

	↖	→	↗	←	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	58	763	13	1260	471	165	273	33	292	159
Future Volume (vph)	58	763	13	1260	471	165	273	33	292	159
Turn Type	Perm	NA	Perm	NA	custom	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		6		3		4		3
Permitted Phases		2		6		2		4		8
Detector Phase		2		2		6		6		3
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	66.0	66.0	66.0	66.0	30.0	34.0	34.0	34.0	30.0	64.0
Total Split (%)	50.8%	50.8%	50.8%	50.8%	23.1%	26.2%	26.2%	26.2%	23.1%	49.2%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
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)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4
Lead/Lag					Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	67.4	67.4	67.4	67.4	91.0	24.6	24.6	24.6	53.0	50.6
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.70	0.19	0.19	0.19	0.41	0.39
v/c Ratio	0.60	0.55	0.06	0.71	0.48	0.85	0.79	0.11	0.78	0.34
Control Delay	54.0	23.3	19.9	27.9	7.2	84.4	66.7	5.0	54.1	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	23.3	19.9	27.9	7.2	84.4	66.7	5.0	54.1	24.8
LOS	D	C	B	C	A	F	E	A	D	C
Approach Delay		25.2		22.3			68.5			41.5
Approach LOS		C		C			E			D

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 79 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 31.6
 Intersection LOS: C
 Intersection Capacity Utilization 93.4%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Existing PM Peak Hour
05/28/2021

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	58	763	127	13	1260	471	165	273	33	292	159	62
Future Volume (vph)	58	763	127	13	1260	471	165	273	33	292	159	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.93	1.00	1.00	0.94	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1620	3190		1616	3500	1381	1617	1863	1366	1661	1684	
Fit Permitted	0.11	1.00		0.23	1.00	1.00	0.62	1.00	1.00	0.24	1.00	
Satd. Flow (perm)	192	3190		398	3500	1381	1052	1863	1366	419	1684	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	59	779	130	13	1286	481	168	279	34	298	162	63
RTOR Reduction (vph)	0	9	0	0	0	40	0	0	28	0	12	0
Lane Group Flow (vph)	59	900	0	13	1286	441	168	279	6	298	213	0
Conf. Peds. (#/hr)	21		19	19		21	22		32	32		22
Heavy Vehicles (%)	4%	2%	2%	8%	2%	1%	4%	2%	4%	1%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	0
Turn Type	Perm	NA		Perm	NA	custom	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases		2			6	2		4		4	8	
Actuated Green, G (s)	67.4	67.4		67.4	67.4	89.4	24.6	24.6	24.6	50.6	50.6	
Effective Green, g (s)	67.4	67.4		67.4	67.4	89.4	24.6	24.6	24.6	50.6	50.6	
Actuated g/C Ratio	0.52	0.52		0.52	0.52	0.69	0.19	0.19	0.19	0.39	0.39	
Clearance Time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
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)	99	1653		206	1814	949	199	352	258	373	655	
v/s Ratio Prot		0.28			c0.37	0.08		0.15		c0.14	0.13	
v/s Ratio Perm	0.31			0.03		0.24	0.16		0.00	c0.18		
v/c Ratio	0.60	0.54		0.06	0.71	0.46	0.84	0.79	0.02	0.80	0.33	
Uniform Delay, d1	21.8	21.0		15.6	23.8	9.3	50.9	50.3	42.9	31.1	27.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.48	0.97	
Incremental Delay, d2	23.7	1.3		0.6	2.4	0.4	26.5	11.6	0.0	10.7	0.3	
Delay (s)	45.5	22.3		16.2	26.2	9.7	77.3	61.8	43.0	56.9	27.1	
Level of Service	D	C		B	C	A	E	E	D	E	C	
Approach Delay (s)		23.7			21.7			65.9			44.1	
Approach LOS		C			C			E		D		

Intersection Summary

HCM 2000 Control Delay 31.0
 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.77
 Actuated Cycle Length (s) 130.0
 Sum of lost time (s) 16.0
 Intersection Capacity Utilization 93.4%
 ICU Level of Service F
 Analysis Period (min) 15

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Existing PM Peak Hour
05/28/2021

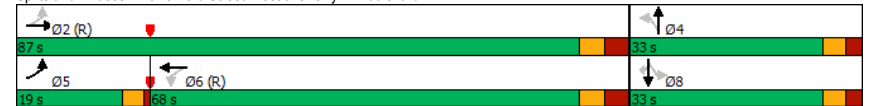
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑	
Traffic Volume (veh/h)	1115	15	141	1688	12	157	
Future Volume (Veh/h)	1115	15	141	1688	12	157	
Sign Control	Free		Free	Stop			
Grade	0%		0%	0%			
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	
Hourly flow rate (vph)	1126	15	142	1705	12	159	
Pedestrians					12		
Lane Width (m)					3.3		
Walking Speed (m/s)					1.1		
Percent Blockage					1		
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (m)			308				
pX, platoon unblocked				0.56			
vC, conflicting volume			1153		2282	582	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1153		1729	582	
tC, single (s)			4.3		6.8	7.0	
tC, 2 stage (s)							
tF (s)			2.3		3.5	3.4	
p0 queue free %			75		65	64	
cM capacity (veh/h)			563		34	441	
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	751	390	142	852	852	12	159
Volume Left	0	0	142	0	0	12	0
Volume Right	0	15	0	0	0	0	159
cSH	1700	1700	563	1700	1700	34	441
Volume to Capacity	0.44	0.23	0.25	0.50	0.50	0.35	0.36
Queue Length 95th (m)	0.0	0.0	7.6	0.0	0.0	8.8	12.3
Control Delay (s)	0.0	0.0	13.5	0.0	0.0	160.9	17.7
Lane LOS			B			F	C
Approach Delay (s)	0.0		1.0			27.7	
Approach LOS						D	
Intersection Summary							
Average Delay			2.1				
Intersection Capacity Utilization			56.7%			ICU Level of Service	B
Analysis Period (min)			15				

Timings
5: Oxford Street West & Cherryhill Boulevard

Existing PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	144	1105	8	1568	45	7	176	1	245
Future Volume (vph)	144	1105	8	1568	45	7	176	1	245
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	19.0	87.0	68.0	68.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	15.8%	72.5%	56.7%	56.7%	27.5%	27.5%	27.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	87.7	84.6	69.5	69.5	22.5	22.5	22.5	22.5	22.5
Actuated g/C Ratio	0.73	0.70	0.58	0.58	0.19	0.19	0.19	0.19	0.19
v/c Ratio	0.73	0.52	0.04	0.90	0.20	0.11	0.82	0.00	0.60
Control Delay	44.6	9.8	15.1	31.1	41.1	17.2	72.7	36.0	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	9.8	15.1	31.1	41.1	17.2	72.7	36.0	14.7
LOS	D	A	B	C	D	B	E	D	B
Approach Delay		13.7		31.0		31.0		39.0	
Approach LOS		B		C		C		D	
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 94 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 105									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.90									
Intersection Signal Delay: 25.5									
Intersection Capacity Utilization 86.9%									
Analysis Period (min) 15									
Intersection LOS: C									
ICU Level of Service E									

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Existing PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	144	1105	19	8	1568	42	45	7	26	176	1	245
Future Volume (vph)	144	1105	19	8	1568	42	45	7	26	176	1	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	1.00	0.94
Fpfb, ped/bikes	1.00	1.00		0.99	1.00		0.95	1.00		0.96	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1677	3345		1693	3375		1626	1595		1613	1837	1400
Flt Permitted	0.05	1.00		0.23	1.00		0.76	1.00		0.73	1.00	1.00
Satd. Flow (perm)	96	3345		409	3375		1296	1595		1245	1837	1400
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	1201	21	9	1704	46	49	8	28	191	1	266
RTOR Reduction (vph)	0	1	0	0	1	0	0	23	0	0	0	181
Lane Group Flow (vph)	157	1221	0	9	1749	0	49	13	0	191	1	85
Conf. Peds. (#/hr)	19		21	21		19	37		28	28		37
Heavy Vehicles (%)	10%	3%	11%	0%	2%	3%	3%	0%	3%	3%	0%	6%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	5
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		6			4			8		8
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	84.6	84.6		69.5	69.5		22.5	22.5		22.5	22.5	22.5
Effective Green, g (s)	84.6	84.6		69.5	69.5		22.5	22.5		22.5	22.5	22.5
Actuated g/C Ratio	0.70	0.70		0.58	0.58		0.19	0.19		0.19	0.19	0.19
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	213	2358		236	1954		243	299		233	344	262
v/s Ratio Prot	c0.07	0.37		c0.52			0.01			0.00		
v/s Ratio Perm	0.45			0.02			0.04			c0.15		0.06
v/c Ratio	0.74	0.52		0.04	0.89		0.20	0.04		0.82	0.00	0.32
Uniform Delay, d1	33.5	8.2		10.9	22.1		41.2	39.9		46.8	39.6	42.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.5	0.8		0.3	6.9		0.4	0.1		19.7	0.0	0.7
Delay (s)	45.9	9.0		11.2	28.9		41.6	40.0		66.5	39.6	42.9
Level of Service	D	A		B	C		D	D		E	D	D
Approach Delay (s)		13.2			28.8			40.9			52.7	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	
Intersection Capacity Utilization	86.9%	ICU Level of Service	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

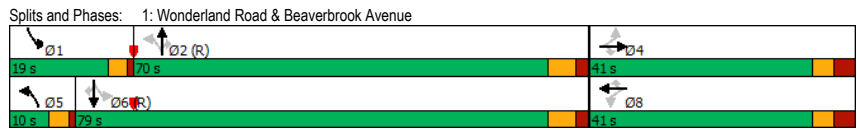
Existing PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔	
Traffic Volume (veh/h)	91	10	71	21	5	13	78	269	31	12	419	84	
Future Volume (Veh/h)	91	10	71	21	5	13	78	269	31	12	419	84	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	
Hourly flow rate (vph)	105	11	82	24	6	15	90	309	36	14	482	97	
Pedestrians	35			19			23			20			
Lane Width (m)	3.7			3.7			3.1			3.5			
Walking Speed (m/s)	1.1			1.1			1.1			1.1			
Percent Blockage	3			2			2			2			
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	1120	1138	588	1146	1168	366	614						364
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1120	1138	588	1146	1168	366	614						364
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2						4.7
tC, 2 stage (s)													
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3						2.7
p0 queue free %	26	94	83	80	96	98	90						98
cM capacity (veh/h)	142	171	471	118	164	658	900						921
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	198	45	90	345	14	579							
Volume Left	105	24	90	0	14	0							
Volume Right	82	15	0	36	0	97							
cSH	203	171	900	1700	921	1700							
Volume to Capacity	0.98	0.26	0.10	0.20	0.02	0.34							
Queue Length 95th (m)	63.1	7.6	2.5	0.0	0.4	0.0							
Control Delay (s)	105.6	33.3	9.4	0.0	9.0	0.0							
Lane LOS	F	D	A	A	A								
Approach Delay (s)	105.6	33.3	2.0	0.2									
Approach LOS	F	D											
Intersection Summary													
Average Delay	18.4												
Intersection Capacity Utilization	55.2%						ICU Level of Service			B			
Analysis Period (min)	15												

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Background 2026 AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Future Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases		4		4	8		8	2		2	6	
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	41.0	41.0	41.0	41.0	41.0	41.0	10.0	70.0	70.0	19.0	79.0	79.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	7.7%	53.8%	53.8%	14.6%	60.8%	60.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	24.2	24.2	24.2	24.2	24.2	24.2	84.9	75.8	75.8	95.1	84.0	84.0
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.65	0.58	0.58	0.73	0.65	0.65
v/c Ratio	0.71	0.48	0.39	0.16	0.16	0.43	0.26	0.51	0.04	0.68	0.54	0.11
Control Delay	65.7	50.3	11.2	42.4	42.2	8.8	9.6	19.2	0.1	16.9	15.5	3.8
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	65.7	50.3	11.2	42.4	42.2	8.8	9.6	19.2	0.1	16.9	15.5	3.8
LOS	E	D	B	D	D	A	A	B	A	B	B	A
Approach Delay		43.0			19.3			18.0			15.0	
Approach LOS		D			B			B			B	

Intersection Summary	
Cycle Length: 130	Actuated Cycle Length: 130
Offset: 43 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Background 2026 AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Future Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.94
Frlb, ped/bikes	0.96	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1588	1807	1478	1664	1773	1436	1530	3433	1422	1650	3500	1286
Fit Permitted	0.72	1.00	1.00	0.56	1.00	1.00	0.19	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	1207	1807	1478	972	1773	1436	309	3433	1422	357	3500	1286
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)	160	161	151	28	54	179	69	1029	36	266	1222	95
RTOR Reduction (vph)	0	0	111	0	0	146	0	0	15	0	0	30
Lane Group Flow (vph)	160	161	40	28	54	33	69	1029	21	266	1222	65
Conf. Peds. (#/hr)	35	14	14		35	17	15	15		15	15	17
Heavy Vehicles (%)	2%	4%	5%	0%	6%	3%	10%	4%	0%	2%	2%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	24.2	24.2	24.2	24.2	24.2	24.2	81.5	75.9	75.9	92.8	83.2	83.2
Effective Green, g (s)	24.2	24.2	24.2	24.2	24.2	24.2	81.5	75.9	75.9	92.8	83.2	83.2
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.63	0.58	0.58	0.71	0.64	0.64
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	224	336	275	180	330	267	246	2004	830	383	2240	823
v/s Ratio Prot		0.09			0.03		0.01	0.30		c0.07	0.35	
v/s Ratio Perm	c0.13		0.03	0.03		0.02	0.16		0.01	c0.43		0.05
v/c Ratio	0.71	0.48	0.14	0.16	0.16	0.12	0.28	0.51	0.03	0.69	0.55	0.08
Uniform Delay, d1	49.7	47.3	44.2	44.3	44.4	44.1	10.2	16.1	11.4	10.1	12.9	8.9
Progression 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
Incremental Delay, d2	10.3	1.1	0.2	0.4	0.2	0.2	0.6	0.9	0.1	5.4	1.0	0.2
Delay (s)	60.0	48.3	44.5	44.7	44.6	44.3	10.8	17.0	11.5	15.5	13.9	9.1
Level of Service	E	D	D	D	D	D	B	B	B	B	B	A
Approach Delay (s)		51.0			44.4			16.5			13.9	
Approach LOS		D			D			B			B	

Intersection Summary	
HCM 2000 Control Delay	22.1 HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.72
Actuated Cycle Length (s)	130.0 Sum of lost time (s) 17.0
Intersection Capacity Utilization	81.6% ICU Level of Service D
Analysis Period (min)	15
c Critical Lane Group	

Timings
3: Proudfoot Lane & Oxford Street West

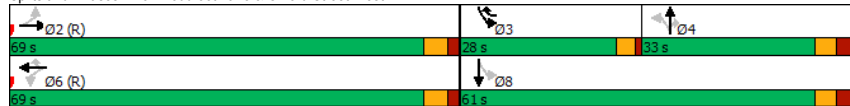
Future Background 2026 AM Peak Hour
05/28/2021

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	73	1311	8	710	191	108	146	48	326	76
Future Volume (vph)	73	1311	8	710	191	108	146	48	326	76
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		6	3		4		3	8
Permitted Phases		2		6	3		4		3	8
Detector Phase		2		6	3		4		3	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	69.0	69.0	69.0	69.0	28.0	33.0	33.0	33.0	28.0	61.0
Total Split (%)	53.1%	53.1%	53.1%	53.1%	21.5%	25.4%	25.4%	25.4%	21.5%	46.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
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)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4
Lead/Lag					Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	73.5	73.5	73.5	73.5	98.1	17.5	17.5	17.5	46.9	44.5
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.75	0.13	0.13	0.13	0.36	0.34
v/c Ratio	0.22	0.74	0.08	0.37	0.17	0.69	0.61	0.21	0.76	0.21
Control Delay	18.4	25.5	17.5	19.6	5.6	75.1	62.5	11.6	44.6	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	25.5	17.5	19.6	5.6	75.1	62.5	11.6	44.6	23.0
LOS	B	C	B	B	A	E	E	B	D	C
Approach Delay		25.1		16.6			58.9			39.1
Approach LOS		C		B			E			D

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 43 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 27.9
 Intersection Capacity Utilization 90.7%
 Analysis Period (min) 15

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Future Background 2026 AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	73	1311	59	8	710	191	108	146	48	326	76	36
Future Volume (vph)	73	1311	59	8	710	191	108	146	48	326	76	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	3271		1517	3368	1419	1605	1792	1384	1641	1553	
Fit Permitted	0.33	1.00		0.11	1.00	1.00	0.68	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	591	3271		178	3368	1419	1157	1792	1384	745	1553	
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)	73	1311	59	8	710	191	108	146	48	326	76	36
RTOR Reduction (vph)	0	2	0	0	0	45	0	0	42	0	15	0
Lane Group Flow (vph)	73	1368	0	8	710	146	108	146	6	326	97	0
Conf. Peds. (#/hr)	2		5	5		2	10		15	15		10
Heavy Vehicles (%)	0%	2%	6%	15%	6%	4%	6%	6%	5%	2%	19%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases		2			6	3		4		3	8	
Actuated Green, G (s)	73.5	73.5		73.5	73.5	96.5	17.5	17.5	17.5	44.5	44.5	
Effective Green, g (s)	73.5	73.5		73.5	73.5	96.5	17.5	17.5	17.5	44.5	44.5	
Actuated g/C Ratio	0.57	0.57		0.57	0.57	0.74	0.13	0.13	0.13	0.34	0.34	
Clearance Time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
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)	334	1849		100	1904	1053	155	241	186	413	531	
v/s Ratio Prot		c0.42			0.21	0.02		0.08		c0.14	0.06	
v/s Ratio Perm	0.12			0.05		0.08	0.09		0.00	c0.13		
v/c Ratio	0.22	0.74		0.08	0.37	0.14	0.70	0.61	0.03	0.79	0.18	
Uniform Delay, d1	14.0	21.1		12.9	15.6	4.8	53.7	53.0	48.9	35.4	30.0	
Progression Factor	1.00	1.00		0.93	1.14	5.92	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	2.7		1.5	0.5	0.1	12.8	4.3	0.1	9.7	0.2	
Delay (s)	15.5	23.8		13.5	18.3	28.5	66.5	57.3	49.0	45.1	30.2	
Level of Service	B	C		B	B	C	E	E	D	D	C	
Approach Delay (s)		23.4			20.4			59.2			41.2	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay 28.5
 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.78
 Actuated Cycle Length (s) 130.0
 Sum of lost time (s) 16.0
 Intersection Capacity Utilization 90.7%
 ICU Level of Service E
 Analysis Period (min) 15

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Background 2026 AM Peak Hour
05/28/2021

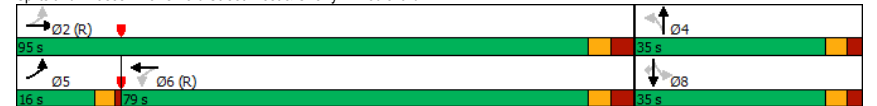
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↔↔		↔	↔↔	↔	↔	
Traffic Volume (veh/h)	1588	26	83	867	21	209	
Future Volume (Veh/h)	1588	26	83	867	21	209	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1588	26	83	867	21	209	
Pedestrians					7		
Lane Width (m)					3.3		
Walking Speed (m/s)					1.1		
Percent Blockage					1		
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)				308			
pX, platoon unblocked					0.93		
vC, conflicting volume			1621		2208	814	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1621		2146	814	
tC, single (s)			4.4		6.8	7.1	
tC, 2 stage (s)							
tF (s)			2.4		3.5	3.4	
p0 queue free %			76		29	32	
cM capacity (veh/h)			340		30	307	
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	1059	555	83	434	434	21	209
Volume Left	0	0	83	0	0	21	0
Volume Right	0	26	0	0	0	0	209
cSH	1700	1700	340	1700	1700	30	307
Volume to Capacity	0.62	0.33	0.24	0.26	0.26	0.71	0.68
Queue Length 95th (m)	0.0	0.0	7.1	0.0	0.0	17.6	35.3
Control Delay (s)	0.0	0.0	19.0	0.0	0.0	267.9	38.5
Lane LOS			C			F	E
Approach Delay (s)	0.0		1.7			59.4	
Approach LOS						F	
Intersection Summary							
Average Delay			5.5				
Intersection Capacity Utilization			63.8%			ICU Level of Service	B
Analysis Period (min)			15				

Timings
5: Oxford Street West & Cherryhill Boulevard

Future Background 2026 AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	149	1486	26	808	18	3	71	22	102
Future Volume (vph)	149	1486	26	808	18	3	71	22	102
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	16.0	95.0	79.0	79.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	12.3%	73.1%	60.8%	60.8%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	103.7	100.6	88.2	88.2	16.5	16.5	16.5	16.5	16.5
Actuated g/C Ratio	0.80	0.77	0.68	0.68	0.13	0.13	0.13	0.13	0.13
v/c Ratio	0.31	0.60	0.14	0.39	0.12	0.07	0.47	0.09	0.40
Control Delay	3.9	4.5	13.1	11.1	47.1	23.7	60.2	46.3	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	4.5	13.1	11.1	47.1	23.7	60.2	46.3	12.7
LOS	A	A	B	B	D	C	E	D	B
Approach Delay		4.4		11.2		36.4		33.8	
Approach LOS		A		B		D		C	
Intersection Summary									
Cycle Length: 130									
Actuated Cycle Length: 130									
Offset: 91 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green									
Natural Cycle: 85									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.60									
Intersection Signal Delay: 8.9									
Intersection Capacity Utilization 82.4%									
Analysis Period (min) 15									
Intersection LOS: A									
ICU Level of Service E									

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Future Background 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	149	1486	81	26	808	53	18	3	12	71	22	102
Future Volume (vph)	149	1486	81	26	808	53	18	3	12	71	22	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	1.00	0.93
Fipb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		0.93	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1659	3355		1701	3222		1563	1538		1605	1837	1324
Flt Permitted	0.29	1.00		0.15	1.00		0.74	1.00		0.75	1.00	1.00
Satd. Flow (perm)	506	3355		272	3222		1223	1538		1185	1837	1324
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)	149	1486	81	26	808	53	18	3	12	71	22	102
RTOR Reduction (vph)	0	2	0	0	3	0	0	10	0	0	0	89
Lane Group Flow (vph)	149	1565	0	26	858	0	18	5	0	71	22	13
Conf. Peds. (#/hr)	17		11	11		17	42		51	51		42
Heavy Vehicles (%)	11%	2%	5%	0%	6%	8%	6%	0%	0%	6%	0%	13%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		6		6		4		8		8
Permitted Phases	2			6		4				8		8
Actuated Green, G (s)	100.6	100.6		88.2	88.2		16.5	16.5		16.5	16.5	16.5
Effective Green, g (s)	100.6	100.6		88.2	88.2		16.5	16.5		16.5	16.5	16.5
Actuated g/C Ratio	0.77	0.77		0.68	0.68		0.13	0.13		0.13	0.13	0.13
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	466	2596		184	2186		155	195		150	233	168
v/s Ratio Prot	0.02	c0.47		0.27		0.00				0.01		
v/s Ratio Perm	0.23			0.10		0.01				c0.06		0.01
v/c Ratio	0.32	0.60		0.14	0.39		0.12	0.02		0.47	0.09	0.08
Uniform Delay, d1	4.3	6.2		7.4	9.2		50.3	49.7		52.7	50.1	50.0
Progression Factor	0.67	0.49		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.8		1.6	0.5		0.3	0.0		2.3	0.2	0.2
Delay (s)	3.2	3.8		9.0	9.7		50.6	49.7		55.1	50.3	50.2
Level of Service	A	A		A	A		D	D		E	D	D
Approach Delay (s)		3.8			9.7			50.2			52.0	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.9
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

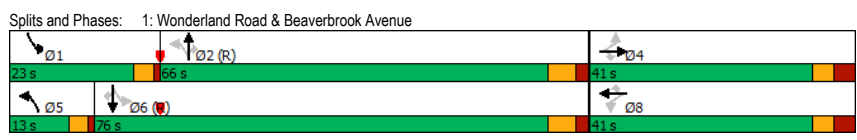
Future Background 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	97	4	69	39	11	18	59	286	12	10	305	74
Future Volume (Veh/h)	97	4	69	39	11	18	59	286	12	10	305	74
Sign Control		Stop			Stop			Free			Free	
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)	97	4	69	39	11	18	59	286	12	10	305	74
Pedestrians					20			25			11	
Lane Width (m)					3.7			3.1			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			2			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	816	814	383	851	845	323	395			318		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	816	814	383	851	845	323	395			318		
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	60	99	89	82	96	97	95			99		
cM capacity (veh/h)	245	286	633	220	274	702	1115			1230		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	170	68	59	298	10	379						
Volume Left	97	39	59	0	10	0						
Volume Right	69	18	0	12	0	74						
cSH	328	280	1115	1700	1230	1700						
Volume to Capacity	0.52	0.24	0.05	0.18	0.01	0.22						
Queue Length 95th (m)	21.5	7.1	1.3	0.0	0.2	0.0						
Control Delay (s)	27.2	22.0	8.4	0.0	8.0	0.0						
Lane LOS	D	C	A		A							
Approach Delay (s)	27.2	22.0	1.4		0.2							
Approach LOS	D	C										
Intersection Summary												
Average Delay				6.8								
Intersection Capacity Utilization			46.2%		ICU Level of Service		A					
Analysis Period (min)			15									

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Background 2026 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Future Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		4	8		8	2	2	6		6
Permitted Phases		4		4	8		8	5	2	2	1	6
Detector Phase		4		4	8		8	5	2	2	1	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	41.0	41.0	41.0	41.0	41.0	41.0	13.0	66.0	66.0	23.0	76.0	76.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	10.0%	50.8%	50.8%	17.7%	58.5%	58.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (s)	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7	0.0	-2.3	-2.3	0.0	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	29.3	29.3	29.3	29.3	29.3	29.3	85.0	73.4	73.4	90.2	77.1	77.1
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.65	0.56	0.56	0.69	0.59	0.59
v/c Ratio	0.93	0.39	0.38	0.37	0.68	0.74	0.74	0.64	0.07	0.69	0.61	0.27
Control Delay	116.6	44.2	8.3	46.1	53.7	24.9	31.9	23.2	0.8	26.1	19.3	4.0
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	116.6	44.2	8.3	46.1	53.7	24.9	31.9	23.2	0.8	26.1	19.3	4.0
LOS	F	D	A	D	D	C	C	C	A	C	B	A
Approach Delay		47.3			38.1			23.6			18.1	
Approach LOS		D			D			C			B	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 38 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 26.2
 Intersection LOS: C
 Intersection Capacity Utilization 89.6%
 ICU Level of Service E
 Analysis Period (min) 15



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Background 2026 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Future Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00	0.89
Fipb, ped/bikes	0.98	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1636	1789	1500	1614	1842	1472	1667	3535	1389	1668	3500	1305
Fit Permitted	0.29	1.00	1.00	0.53	1.00	1.00	0.15	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	506	1789	1500	903	1842	1472	259	3535	1389	210	3500	1305
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)	106	157	176	76	281	380	218	1280	58	217	1264	232
RTOR Reduction (vph)	0	0	131	0	0	185	0	0	25	0	0	79
Lane Group Flow (vph)	106	157	45	76	281	195	218	1280	33	217	1264	153
Conf. Peds. (#/hr)	31		26	26		31	36		24	24		36
Heavy Vehicles (%)	1%	5%	2%	2%	2%	1%	1%	1%	0%	1%	2%	3%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2	2	1	6	
Permitted Phases		4		4	8		8	2	2	6		6
Actuated Green, G (s)	26.6	26.6	26.6	26.6	26.6	26.6	82.7	71.1	71.1	90.1	74.8	74.8
Effective Green, g (s)	29.3	29.3	29.3	29.3	29.3	29.3	82.7	73.4	73.4	90.1	77.1	77.1
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.64	0.56	0.56	0.69	0.59	0.59
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	114	403	338	203	415	331	290	1995	784	317	2075	773
v/s Ratio Prot		0.09			0.15		0.07	0.36		0.08	0.36	
v/s Ratio Perm	c0.21		0.03	0.08		0.13	c0.41		0.02	0.39		0.12
v/c Ratio	0.93	0.39	0.13	0.37	0.68	0.59	0.75	0.64	0.04	0.68	0.61	0.20
Uniform Delay, d1	49.3	42.8	40.2	42.6	46.0	45.0	14.7	19.3	12.6	18.0	16.9	12.2
Progression 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
Incremental Delay, d2	61.7	0.6	0.2	1.2	4.3	2.7	10.5	1.6	0.1	6.0	1.3	0.6
Delay (s)	111.1	43.4	40.4	43.8	50.4	47.6	25.2	20.9	12.7	24.0	18.2	12.8
Level of Service	F	D	D	D	D	D	C	C	B	C	B	B
Approach Delay (s)		58.5			48.3			21.2			18.2	
Approach LOS		E			D			C			B	

Intersection Summary
 HCM 2000 Control Delay 28.2
 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.77
 Actuated Cycle Length (s) 130.0
 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 89.6%
 ICU Level of Service E
 Analysis Period (min) 15
 c Critical Lane Group

Timings
3: Proudfoot Lane & Oxford Street West

Future Background 2026 PM Peak Hour
05/28/2021

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	61	821	14	1345	505	177	293	35	313	168
Future Volume (vph)	61	821	14	1345	505	177	293	35	313	168
Turn Type	Perm	NA	Perm	NA	custom	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		6	3		4		3	8
Permitted Phases		2		6	2	4		4	8	
Detector Phase	2	2	6	6	3	4	4	4	3	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	72.4	72.4	72.4	72.4	26.2	31.4	31.4	31.4	26.2	57.6
Total Split (%)	55.7%	55.7%	55.7%	55.7%	20.2%	24.2%	24.2%	24.2%	20.2%	44.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
Lost Time Adjust (s)	-1.6	-1.6	-1.6	-1.6	0.0	-2.4	-2.4	-2.4	0.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	70.5	70.5	70.5	70.5	92.1	25.9	25.9	25.9	51.5	51.5
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.71	0.20	0.20	0.20	0.40	0.40
v/c Ratio	0.64	0.55	0.07	0.71	0.50	0.86	0.79	0.11	0.93	0.35
Control Delay	57.2	20.8	16.5	25.2	7.4	83.9	65.4	5.3	67.9	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	20.8	16.5	25.2	7.4	83.9	65.4	5.3	67.9	26.2
LOS	E	C	B	C	A	F	E	A	E	C
Approach Delay		23.0		20.3			67.8			50.0
Approach LOS		C		C			E			D

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 79 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 31.2 Intersection LOS: C
 Intersection Capacity Utilization 92.7% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Future Background 2026 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	61	821	134	14	1345	505	177	293	35	313	168	66
Future Volume (vph)	61	821	134	14	1345	505	177	293	35	313	168	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.92	1.00	1.00	0.94	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1620	3192		1616	3500	1380	1617	1863	1366	1664	1684	
Fit Permitted	0.10	1.00		0.22	1.00	1.00	0.61	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	176	3192		372	3500	1380	1043	1863	1366	269	1684	
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)	61	821	134	14	1345	505	177	293	35	313	168	66
RTOR Reduction (vph)	0	10	0	0	0	34	0	0	28	0	11	0
Lane Group Flow (vph)	61	945	0	14	1345	471	177	293	7	313	223	0
Conf. Peds. (#/hr)	21		19	19		21	22		32	32		22
Heavy Vehicles (%)	4%	2%	2%	8%	2%	1%	4%	2%	4%	1%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	0
Turn Type	Perm	NA		Perm	NA	custom	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases		2			6	2	4		4	8		
Actuated Green, G (s)	68.9	68.9		68.9	68.9	90.5	23.5	23.5	23.5	49.1	49.1	
Effective Green, g (s)	70.5	70.5		70.5	70.5	90.5	25.9	25.9	25.9	49.1	49.1	
Actuated g/C Ratio	0.54	0.54		0.54	0.54	0.70	0.20	0.20	0.20	0.38	0.40	
Clearance Time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
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)	95	1731		201	1898	960	207	371	272	333	667	
v/s Ratio Prot		0.30			c0.38	0.08		0.16		c0.16	0.13	
v/s Ratio Perm	0.35			0.04		0.26	0.17		0.01	c0.20		
v/c Ratio	0.64	0.55		0.07	0.71	0.49	0.86	0.79	0.03	0.94	0.33	
Uniform Delay, d1	20.9	19.3		14.2	22.1	9.1	50.2	49.5	41.9	36.3	27.3	
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	28.8	1.2		0.7	2.3	0.4	27.4	10.7	0.0	33.5	0.3	
Delay (s)	49.7	20.6		14.8	24.4	9.5	77.7	60.1	41.9	69.8	27.6	
Level of Service	D	C		B	C	A	E	E	D	E	C	
Approach Delay (s)		22.3			20.3			65.0			51.7	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay 30.9 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.80
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 92.7% ICU Level of Service F
 Analysis Period (min) 15

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Background 2026 PM Peak Hour
05/28/2021

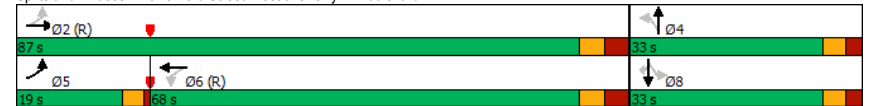
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↓	↑↑	↓	↑	
Traffic Volume (veh/h)	1182	25	183	1785	32	176	
Future Volume (Veh/h)	1182	25	183	1785	32	176	
Sign Control	Free		Free		Stop		
Grade	0%		0%		0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1182	25	183	1785	32	176	
Pedestrians						12	
Lane Width (m)						3.3	
Walking Speed (m/s)						1.1	
Percent Blockage						1	
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (m)	308						
pX, platoon unblocked	0.59						
vC, conflicting volume			1219	2465	616		
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1219	2095	616		
tC, single (s)			4.3	6.8	7.0		
tC, 2 stage (s)							
tF (s)			2.3	3.5	3.4		
p0 queue free %			65	0	58		
cM capacity (veh/h)			530	18	420		
Direction_Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	788	419	183	892	892	32	176
Volume Left	0	0	183	0	0	32	0
Volume Right	0	25	0	0	0	0	176
cSH	1700	1700	530	1700	1700	18	420
Volume to Capacity	0.46	0.25	0.35	0.53	0.53	1.81	0.42
Queue Length 95th (m)	0.0	0.0	11.6	0.0	0.0	34.0	15.4
Control Delay (s)	0.0	0.0	15.3	0.0	0.0	839.1	19.6
Lane LOS			C	F			C
Approach Delay (s)	0.0		1.4		145.7		
Approach LOS			F		F		
Intersection Summary							
Average Delay			9.8				
Intersection Capacity Utilization			59.3%		ICU Level of Service B		
Analysis Period (min)	15						

Timings
5: Oxford Street West & Cherryhill Boulevard

Future Background 2026 PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	↓	↑↑	↓	↑↑	↓	↑	↓	↑	↓	
Traffic Volume (vph)	152	1182	8	1692	45	7	185	1	258	
Future Volume (vph)	152	1182	8	1692	45	7	185	1	258	
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm	
Protected Phases	5	2		6		4		8		
Permitted Phases	2		6		4		8		8	
Detector Phase	5	2	6	6	4	4	8	8	8	
Switch Phase										
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8	
Total Split (s)	19.0	87.0	68.0	68.0	33.0	33.0	33.0	33.0	33.0	
Total Split (%)	15.8%	72.5%	56.7%	56.7%	27.5%	27.5%	27.5%	27.5%	27.5%	
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5	
Lost Time Adjust (s)	0.0	-3.1	-3.1	-3.1	-1.8	-1.8	-1.8	-1.8	-1.8	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead		Lag		Lag		Lag		Lag	
Lead-Lag Optimize?	Yes		Yes		Yes		Yes		Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None	
Act Effct Green (s)	88.2	88.2	73.4	73.4	23.8	23.8	23.8	23.8	23.8	
Actuated g/C Ratio	0.74	0.74	0.61	0.61	0.20	0.20	0.20	0.20	0.20	
v/c Ratio	0.72	0.49	0.03	0.84	0.18	0.10	0.75	0.00	0.56	
Control Delay	43.3	7.9	13.1	25.3	39.4	16.8	63.4	35.0	12.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	43.3	7.9	13.1	25.3	39.4	16.8	63.4	35.0	12.6	
LOS	D	A	B	C	D	B	E	C	B	
Approach Delay	11.9		25.2			29.9		33.8		
Approach LOS	B		C			C		C		
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 94 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 95										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.84										
Intersection Signal Delay: 21.4					Intersection LOS: C					
Intersection Capacity Utilization 87.0%					ICU Level of Service E					
Analysis Period (min) 15										

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Future Background 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	152	1182	19	8	1692	45	45	7	26	185	1	258
Future Volume (vph)	152	1182	19	8	1692	45	45	7	26	185	1	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	1.00	0.94
Fipb, ped/bikes	1.00	1.00		0.99	1.00		0.95	1.00		0.96	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1677	3346		1693	3375		1626	1592		1613	1837	1400
Flt Permitted	0.05	1.00		0.23	1.00		0.76	1.00		0.74	1.00	1.00
Satd. Flow (perm)	95	3346		418	3375		1296	1592		1249	1837	1400
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)	152	1182	19	8	1692	45	45	7	26	185	1	258
RTOR Reduction (vph)	0	1	0	0	1	0	0	21	0	0	0	181
Lane Group Flow (vph)	152	1200	0	8	1736	0	45	12	0	185	1	77
Confl. Peds. (#/hr)	19		21	21		19	37		28	28		37
Heavy Vehicles (%)	10%	3%	11%	0%	2%	3%	3%	0%	0%	3%	0%	6%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	5
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	85.1	85.1		70.3	70.3		22.0	22.0		22.0	22.0	22.0
Effective Green, g (s)	85.1	88.2		73.4	73.4		23.8	23.8		23.8	23.8	23.8
Actuated g/C Ratio	0.71	0.74		0.61	0.61		0.20	0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	209	2459		255	2064		257	315		247	364	277
v/s Ratio Prot	c0.07	0.36			c0.51			0.01				0.00
v/s Ratio Perm	0.45			0.02			0.03			c0.15		0.05
v/c Ratio	0.73	0.49		0.03	0.84		0.18	0.04		0.75	0.00	0.28
Uniform Delay, d1	32.7	6.6		9.2	18.6		39.9	38.9		45.3	38.6	40.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.9	0.7		0.2	4.3		0.3	0.1		11.7	0.0	0.5
Delay (s)	44.6	7.3		9.5	23.0		40.3	38.9		57.0	38.6	41.4
Level of Service	D	A		A	C		D	D		E	D	D
Approach Delay (s)		11.5			22.9			39.7			47.9	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	
Intersection Capacity Utilization	87.0%	ICU Level of Service	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

Future Background 2026 PM Peak Hour
05/28/2021

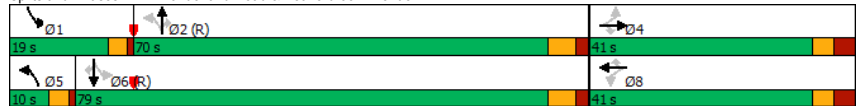
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔	
Traffic Volume (veh/h)	94	10	73	21	5	13	80	276	31	12	430	87	
Future Volume (Veh/h)	94	10	73	21	5	13	80	276	31	12	430	87	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	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)	94	10	73	21	5	13	80	276	31	12	430	87	
Pedestrians	35			19			23			20			
Lane Width (m)	3.7			3.7			3.1			3.5			
Walking Speed (m/s)	1.1			1.1			1.1			1.1			
Percent Blockage	3			2			2			2			
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	1004	1018	532	1026	1046	330	552						326
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1004	1018	532	1026	1046	330	552						326
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2						4.7
tC, 2 stage (s)													
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3						2.7
p0 queue free %	47	95	86	86	97	98	92						99
cM capacity (veh/h)	177	205	509	153	198	690	952						956
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	177	39	80	307	12	517							
Volume Left	94	21	80	0	12	0							
Volume Right	73	13	0	31	0	87							
cSH	245	215	952	1700	956	1700							
Volume to Capacity	0.72	0.18	0.08	0.18	0.01	0.30							
Queue Length 95th (m)	37.6	4.9	2.1	0.0	0.3	0.0							
Control Delay (s)	50.6	25.4	9.1	0.0	8.8	0.0							
Lane LOS	F	D	A	A	A								
Approach Delay (s)	50.6	25.4	1.9	0.2									
Approach LOS	F	D											
Intersection Summary													
Average Delay				9.5									
Intersection Capacity Utilization				56.3%				ICU Level of Service		B			
Analysis Period (min)				15									

Timings Background 2026 AM Peak Hour - Sensitivity
1: Wonderland Road & Beaverbrook Avenue 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Future Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases		4		4	8		8	2		2	6	
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	41.0	41.0	41.0	41.0	41.0	41.0	10.0	70.0	70.0	19.0	79.0	79.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	7.7%	53.8%	53.8%	14.6%	60.8%	60.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	24.2	24.2	24.2	24.2	24.2	24.2	84.9	75.8	75.8	95.1	84.0	84.0
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.65	0.58	0.58	0.73	0.65	0.65
v/c Ratio	0.71	0.48	0.39	0.16	0.16	0.43	0.26	0.51	0.04	0.68	0.54	0.11
Control Delay	65.7	50.3	11.2	42.4	42.2	8.8	9.6	19.2	0.1	16.9	15.5	3.8
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	65.7	50.3	11.2	42.4	42.2	8.8	9.6	19.2	0.1	16.9	15.5	3.8
LOS	E	D	B	D	D	A	A	B	A	B	B	A
Approach Delay	43.0			19.3			18.0			15.0		
Approach LOS	D			B			B			B		

Intersection Summary	
Cycle Length: 130	Actuated Cycle Length: 130
Offset: 43 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Wonderland Road & Beaverbrook Avenue



HCM Signalized Intersection Capacity Analysis Background 2026 AM Peak Hour - Sensitivity
1: Wonderland Road & Beaverbrook Avenue 05/28/2021

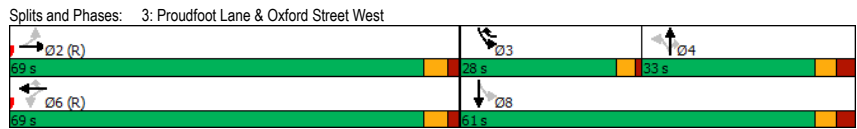
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Future Volume (vph)	160	161	151	28	54	179	69	1029	36	266	1222	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.94
Fripb, ped/bikes	0.96	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1588	1807	1478	1664	1773	1436	1530	3433	1422	1650	3500	1286
Fit Permitted	0.72	1.00	1.00	0.56	1.00	1.00	0.19	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	1207	1807	1478	972	1773	1436	309	3433	1422	357	3500	1286
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)	160	161	151	28	54	179	69	1029	36	266	1222	95
RTOR Reduction (vph)	0	0	111	0	0	146	0	0	15	0	0	30
Lane Group Flow (vph)	160	161	40	28	54	33	69	1029	21	266	1222	65
Conf. Peds. (#/hr)	35	14	14		35	17	15	15		15	15	17
Heavy Vehicles (%)	2%	4%	5%	0%	6%	3%	10%	4%	0%	2%	2%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	24.2	24.2	24.2	24.2	24.2	24.2	81.5	75.9	75.9	92.8	83.2	83.2
Effective Green, g (s)	24.2	24.2	24.2	24.2	24.2	24.2	81.5	75.9	75.9	92.8	83.2	83.2
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.63	0.58	0.58	0.71	0.64	0.64
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	224	336	275	180	330	267	246	2004	830	383	2240	823
v/s Ratio Prot		0.09			0.03		0.01	0.30		c0.07	0.35	
v/s Ratio Perm	c0.13		0.03	0.03		0.02	0.16		0.01	c0.43		0.05
v/c Ratio	0.71	0.48	0.14	0.16	0.16	0.12	0.28	0.51	0.03	0.69	0.55	0.08
Uniform Delay, d1	49.7	47.3	44.2	44.3	44.4	44.1	10.2	16.1	11.4	10.1	12.9	8.9
Progression 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
Incremental Delay, d2	10.3	1.1	0.2	0.4	0.2	0.2	0.6	0.9	0.1	5.4	1.0	0.2
Delay (s)	60.0	48.3	44.5	44.7	44.6	44.3	10.8	17.0	11.5	15.5	13.9	9.1
Level of Service	E	D	D	D	D	D	B	B	B	B	B	A
Approach Delay (s)	51.0			44.4			16.5			13.9		
Approach LOS	D			D			B			B		

Intersection Summary	
HCM 2000 Control Delay	22.1 HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.72
Actuated Cycle Length (s)	130.0 Sum of lost time (s) 17.0
Intersection Capacity Utilization	81.6% ICU Level of Service D
Analysis Period (min)	15
c Critical Lane Group	

Timings Background 2026 AM Peak Hour - Sensitivity
 3: Proudfoot Lane & Oxford Street West 05/28/2021

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	73	1311	8	710	191	108	146	48	326	76
Future Volume (vph)	73	1311	8	710	191	108	146	48	326	76
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		6	3		4		3	8
Permitted Phases		2		6	3	4		4	8	
Detector Phase		2		6	3	4		4	3	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	69.0	69.0	69.0	69.0	28.0	33.0	33.0	33.0	28.0	61.0
Total Split (%)	53.1%	53.1%	53.1%	53.1%	21.5%	25.4%	25.4%	25.4%	21.5%	46.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
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)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4
Lead/Lag					Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	73.5	73.5	73.5	73.5	98.1	17.5	17.5	17.5	46.9	44.5
Actuated g/C Ratio	0.57	0.57	0.57	0.57	0.75	0.13	0.13	0.13	0.36	0.34
v/c Ratio	0.22	0.74	0.08	0.37	0.17	0.69	0.61	0.21	0.76	0.21
Control Delay	18.4	25.5	17.0	18.1	7.5	75.1	62.5	11.6	44.6	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	25.5	17.0	18.1	7.5	75.1	62.5	11.6	44.6	23.0
LOS	B	C	B	B	A	E	E	B	D	C
Approach Delay		25.1		15.9		58.9			39.1	
Approach LOS		C		B		E			D	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 43 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 27.7 Intersection LOS: C
 Intersection Capacity Utilization 90.7% ICU Level of Service E
 Analysis Period (min) 15



HCM Signalized Intersection Capacity Analysis Background 2026 AM Peak Hour - Sensitivity
 3: Proudfoot Lane & Oxford Street West 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	73	1311	59	8	710	191	108	146	48	326	76	36
Future Volume (vph)	73	1311	59	8	710	191	108	146	48	326	76	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	3271		1517	3368	1419	1605	1792	1384	1641	1553	
Fit Permitted	0.33	1.00		0.11	1.00	1.00	0.68	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	591	3271		178	3368	1419	1157	1792	1384	745	1553	
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)	73	1311	59	8	710	191	108	146	48	326	76	36
RTOR Reduction (vph)	0	2	0	0	0	45	0	0	42	0	15	0
Lane Group Flow (vph)	73	1368	0	8	710	146	108	146	6	326	97	0
Conf. Peds. (#/hr)	2		5	5		2	10		15	15		10
Heavy Vehicles (%)	0%	2%	6%	15%	6%	4%	6%	6%	5%	2%	19%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases		2			6	3		4		8		
Actuated Green, G (s)	73.5	73.5		73.5	73.5	96.5	17.5	17.5	17.5	44.5	44.5	
Effective Green, g (s)	73.5	73.5		73.5	73.5	96.5	17.5	17.5	17.5	44.5	44.5	
Actuated g/C Ratio	0.57	0.57		0.57	0.57	0.74	0.13	0.13	0.13	0.34	0.34	
Clearance Time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
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)	334	1849		100	1904	1053	155	241	186	413	531	
v/s Ratio Prot		c0.42			0.21	0.02		0.08		c0.14	0.06	
v/s Ratio Perm	0.12			0.05		0.08	0.09		0.00	c0.13		
v/c Ratio	0.22	0.74		0.08	0.37	0.14	0.70	0.61	0.03	0.79	0.18	
Uniform Delay, d1	14.0	21.1		12.9	15.6	4.8	53.7	53.0	48.9	35.4	30.0	
Progression Factor	1.00	1.00		0.90	1.05	8.11	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	2.7		1.5	0.5	0.1	12.8	4.3	0.1	9.7	0.2	
Delay (s)	15.5	23.8		13.1	16.9	39.1	66.5	57.3	49.0	45.1	30.2	
Level of Service	B	C		B	B	D	E	E	D	D	C	
Approach Delay (s)		23.4			21.6		59.2			41.2		
Approach LOS		C			C		E			D		

Intersection Summary
 HCM 2000 Control Delay 28.9 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.78
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 16.0
 Intersection Capacity Utilization 90.7% ICU Level of Service E
 Analysis Period (min) 15

c Critical Lane Group

Timings
4: Beaverbrook Avenue & Oxford Street West

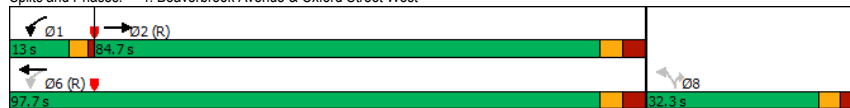
Background 2026 AM Peak Hour - Sensitivity
05/28/2021

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖	↑↑	↗	↘
Traffic Volume (vph)	1588	83	867	21	209
Future Volume (vph)	1588	83	867	21	209
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases		6		8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	9.0	41.1	31.8	31.8
Total Split (s)	84.7	13.0	97.7	32.3	32.3
Total Split (%)	65.2%	10.0%	75.2%	24.8%	24.8%
Yellow Time (s)	3.5	3.0	3.5	3.3	3.3
All-Red Time (s)	3.6	1.0	3.6	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	4.0	7.1	5.8	5.8
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effct Green (s)	93.2	107.3	104.2	12.9	12.9
Actuated g/C Ratio	0.72	0.83	0.80	0.10	0.10
v/c Ratio	0.67	0.40	0.32	0.12	0.78
Control Delay	24.1	10.5	2.8	51.2	39.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	10.5	2.8	51.2	39.3
LOS	C	B	A	D	D
Approach Delay	24.1		3.5	40.4	
Approach LOS	C		A	D	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 18.4
 Intersection LOS: B
 Intersection Capacity Utilization 67.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis Background 2026 AM Peak Hour - Sensitivity
4: Beaverbrook Avenue & Oxford Street West

05/28/2021

	→	↖	←	↗	↘	
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	↘
Traffic Volume (vph)	1588	26	83	867	21	209
Future Volume (vph)	1588	26	83	867	21	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.3	3.0	3.5	3.3	3.3
Total Lost time (s)	7.1		4.0	7.1	5.8	5.8
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	1.00
Fipb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Fit Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3382		1465	3341	1745	1446
Fit Permitted	1.00		0.11	1.00	0.95	1.00
Satd. Flow (perm)	3382		165	3341	1745	1446
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1588	26	83	867	21	209
RTOR Reduction (vph)	1	0	0	0	0	125
Lane Group Flow (vph)	1613	0	83	867	21	84
Confl. Peds. (#/hr)		7	7			
Heavy Vehicles (%)	2%	6%	15%	6%	0%	8%
Bus Blockages (#/hr)	4	0	0	4	0	0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases			6		8	8
Actuated Green, G (s)	93.1		104.2	104.2	12.9	12.9
Effective Green, g (s)	93.1		104.2	104.2	12.9	12.9
Actuated g/C Ratio	0.72		0.80	0.80	0.10	0.10
Clearance Time (s)	7.1		4.0	7.1	5.8	5.8
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2422		203	2677	173	143
v/s Ratio Prot	c0.48		c0.02	0.26		
v/s Ratio Perm			0.31		0.01	c0.06
v/c Ratio	0.67		0.41	0.32	0.12	0.59
Uniform Delay, d1	10.0		8.0	3.5	53.4	56.0
Progression Factor	2.02		1.78	0.62	1.00	1.00
Incremental Delay, d2	1.0		1.3	0.3	0.3	6.0
Delay (s)	21.3		15.5	2.4	53.7	62.0
Level of Service	C		B	A	D	E
Approach Delay (s)	21.3		3.6	61.2		
Approach LOS	C		A	E		

Intersection Summary

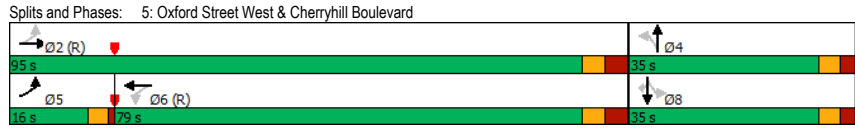
HCM 2000 Control Delay 18.5
 HCM 2000 Level of Service B
 HCM 2000 Volume to Capacity ratio 0.64
 Actuated Cycle Length (s) 130.0
 Sum of lost time (s) 16.9
 Intersection Capacity Utilization 67.6%
 ICU Level of Service C
 Analysis Period (min) 15

c Critical Lane Group

Timings Background 2026 AM Peak Hour - Sensitivity
5: Oxford Street West & Cherryhill Boulevard 05/28/2021

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	149	1486	26	808	18	3	71	22	102
Future Volume (vph)	149	1486	26	808	18	3	71	22	102
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	16.0	95.0	79.0	79.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	12.3%	73.1%	60.8%	60.8%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	103.7	100.6	88.2	88.2	16.5	16.5	16.5	16.5	16.5
Actuated g/C Ratio	0.80	0.77	0.68	0.68	0.13	0.13	0.13	0.13	0.13
v/c Ratio	0.31	0.60	0.14	0.39	0.12	0.07	0.47	0.09	0.40
Control Delay	8.4	14.5	13.1	11.1	47.1	23.7	60.2	46.3	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	14.5	13.1	11.1	47.1	23.7	60.2	46.3	12.7
LOS	A	B	B	B	D	C	E	D	B
Approach Delay		13.9		11.2		36.4		33.8	
Approach LOS		B		B		D		C	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 91 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.60
 Intersection Signal Delay: 14.7 Intersection LOS: B
 Intersection Capacity Utilization 82.4% ICU Level of Service E
 Analysis Period (min) 15



HCM Signalized Intersection Capacity Analysis Background 2026 AM Peak Hour - Sensitivity
5: Oxford Street West & Cherryhill Boulevard 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	149	1486	81	26	808	53	18	3	12	71	22	102
Future Volume (vph)	149	1486	81	26	808	53	18	3	12	71	22	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	1.00	0.93
Fipb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		0.93	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1659	3355		1701	3222		1563	1538		1505	1837	1324
Fit Permitted	0.29	1.00		0.15	1.00		0.74	1.00		0.75	1.00	1.00
Satd. Flow (perm)	506	3355		272	3222		1223	1538		1185	1837	1324
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)	149	1486	81	26	808	53	18	3	12	71	22	102
RTOR Reduction (vph)	0	2	0	0	3	0	0	10	0	0	0	89
Lane Group Flow (vph)	149	1565	0	26	858	0	18	5	0	71	22	13
Confl. Peds. (#/hr)	17		11	11		17	42		51	51		42
Heavy Vehicles (%)	11%	2%	5%	0%	6%	8%	6%	0%	0%	6%	0%	13%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	100.6	100.6		88.2	88.2		16.5	16.5		16.5	16.5	16.5
Effective Green, g (s)	100.6	100.6		88.2	88.2		16.5	16.5		16.5	16.5	16.5
Actuated g/C Ratio	0.77	0.77		0.68	0.68		0.13	0.13		0.13	0.13	0.13
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	466	2596		184	2186		155	195		150	233	168
v/s Ratio Prot	0.02	c0.47			0.27			0.00			0.01	
v/s Ratio Perm	0.23			0.10			0.01			c0.06		0.01
v/c Ratio	0.32	0.60		0.14	0.39		0.12	0.02		0.47	0.09	0.08
Uniform Delay, d1	4.3	6.2		7.4	9.2		50.3	49.7		52.7	50.1	50.0
Progression Factor	1.79	1.82		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.8		1.6	0.5		0.3	0.0		2.3	0.2	0.2
Delay (s)	8.0	12.1		9.0	9.7		50.6	49.7		55.1	50.3	50.2
Level of Service	A	B		A	A		D	D		E	D	D
Approach Delay (s)		11.8			9.7			50.2			52.0	
Approach LOS		B			A			D			D	

Intersection Summary
 HCM 2000 Control Delay 14.3 HCM 2000 Level of Service B
 HCM 2000 Volume to Capacity ratio 0.61
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 16.9
 Intersection Capacity Utilization 82.4% ICU Level of Service E
 Analysis Period (min) 15
 c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis Background 2026 AM Peak Hour - Sensitivity
 6: Platt's Lane & Cherryhill Place 05/28/2021

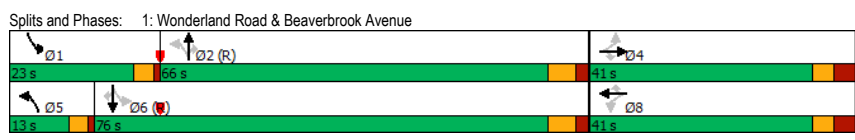


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	97	4	69	39	11	18	59	286	12	10	305	74
Future Volume (Veh/h)	97	4	69	39	11	18	59	286	12	10	305	74
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	1.00	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)	97	4	69	39	11	18	59	286	12	10	305	74
Pedestrians	16			20			25			11		
Lane Width (m)	3.7			3.7			3.1			3.5		
Walking Speed (m/s)	1.1			1.1			1.1			1.1		
Percent Blockage	1			2			2			1		
Right turn flare (veh)												
Median type	None						None					
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	816	814	383	851	845	323	395				318	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	816	814	383	851	845	323	395				318	
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	60	99	89	82	96	97	95				99	
cM capacity (veh/h)	245	286	633	220	274	702	1115				1230	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	170	68	59	298	10	379						
Volume Left	97	39	59	0	10	0						
Volume Right	69	18	0	12	0	74						
cSH	328	280	1115	1700	1230	1700						
Volume to Capacity	0.52	0.24	0.05	0.18	0.01	0.22						
Queue Length 95th (m)	21.5	7.1	1.3	0.0	0.2	0.0						
Control Delay (s)	27.2	22.0	8.4	0.0	8.0	0.0						
Lane LOS	D	C	A		A							
Approach Delay (s)	27.2	22.0	1.4	0.2								
Approach LOS	D	C										
Intersection Summary												
Average Delay	6.8											
Intersection Capacity Utilization	46.2%		ICU Level of Service				A					
Analysis Period (min)	15											

Timings Background 2026 PM Peak Hour - Sensitivity
1: Wonderland Road & Beaverbrook Avenue 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Future Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		4	8		8	2		2	6	
Permitted Phases		4		4	8		8	2		2	6	
Detector Phase		4		4	8		8	2		2	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	41.0	41.0	41.0	41.0	41.0	41.0	13.0	66.0	66.0	23.0	76.0	76.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	10.0%	50.8%	50.8%	17.7%	58.5%	58.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (s)	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7	0.0	-2.3	-2.3	0.0	-2.3	-2.3
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	29.3	29.3	29.3	29.3	29.3	29.3	85.0	73.4	73.4	90.2	77.1	77.1
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.65	0.56	0.56	0.69	0.59	0.59
v/c Ratio	0.93	0.39	0.38	0.37	0.68	0.74	0.74	0.64	0.07	0.69	0.61	0.27
Control Delay	116.6	44.2	8.3	46.1	53.7	24.9	31.9	23.2	0.8	26.1	19.3	4.0
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	116.6	44.2	8.3	46.1	53.7	24.9	31.9	23.2	0.8	26.1	19.3	4.0
LOS	F	D	A	D	D	C	C	C	A	C	B	A
Approach Delay		47.3			38.1			23.6			18.1	
Approach LOS		D			D			C			B	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 38 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 26.2 Intersection LOS: C
 Intersection Capacity Utilization 89.6% ICU Level of Service E
 Analysis Period (min) 15



HCM Signalized Intersection Capacity Analysis Background 2026 PM Peak Hour - Sensitivity
1: Wonderland Road & Beaverbrook Avenue 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Future Volume (vph)	106	157	176	76	281	380	218	1280	58	217	1264	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00	0.89
Flpb, ped/bikes	0.98	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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)	1636	1789	1500	1614	1842	1472	1667	3535	1389	1668	3500	1305
Flt Permitted	0.29	1.00	1.00	0.53	1.00	1.00	0.15	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	506	1789	1500	903	1842	1472	259	3535	1389	210	3500	1305
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)	106	157	176	76	281	380	218	1280	58	217	1264	232
RTOR Reduction (vph)	0	0	131	0	0	185	0	0	25	0	0	79
Lane Group Flow (vph)	106	157	45	76	281	195	218	1280	33	217	1264	153
Conf. Peds. (#/hr)	31		26	26		31	36		24	24		36
Heavy Vehicles (%)	1%	5%	2%	2%	2%	1%	1%	1%	0%	1%	2%	3%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases		4		4	8		8	2		2	6	
Actuated Green, G (s)	26.6	26.6	26.6	26.6	26.6	26.6	82.7	71.1	71.1	90.1	74.8	74.8
Effective Green, g (s)	29.3	29.3	29.3	29.3	29.3	29.3	82.7	73.4	73.4	90.1	77.1	77.1
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23	0.23	0.64	0.56	0.56	0.69	0.59	0.59
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	114	403	338	203	415	331	290	1995	784	317	2075	773
v/s Ratio Prot		0.09			0.15		0.07	0.36		c0.08	0.36	
v/s Ratio Perm	c0.21		0.03	0.08		0.13	c0.41		0.02	0.39		0.12
v/c Ratio	0.93	0.39	0.13	0.37	0.68	0.59	0.75	0.64	0.04	0.68	0.61	0.20
Uniform Delay, d1	49.3	42.8	40.2	42.6	46.0	45.0	14.7	19.3	12.6	18.0	16.9	12.2
Progression 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
Incremental Delay, d2	61.7	0.6	0.2	1.2	4.3	2.7	10.5	1.6	0.1	6.0	1.3	0.6
Delay (s)	111.1	43.4	40.4	43.8	50.4	47.6	25.2	20.9	12.7	24.0	18.2	12.8
Level of Service	F	D	D	D	D	D	C	C	B	C	B	B
Approach Delay (s)		58.5			48.3			21.2			18.2	
Approach LOS		E			D			C			B	

Intersection Summary
 HCM 2000 Control Delay 28.2 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.77
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 89.6% ICU Level of Service E
 Analysis Period (min) 15
 c Critical Lane Group

Timings Background 2026 PM Peak Hour - Sensitivity
3: Proudfoot Lane & Oxford Street West 05/28/2021

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	61	821	14	1345	505	177	293	35	313	168
Future Volume (vph)	61	821	14	1345	505	177	293	35	313	168
Turn Type	Perm	NA	Perm	NA	custom	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		6	3		4		3	8
Permitted Phases		2		6	2	4		4	8	
Detector Phase	2	2	6	6	3	4	4	4	3	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	72.4	72.4	72.4	72.4	26.2	31.4	31.4	31.4	26.2	57.6
Satd. Split (%)	55.7%	55.7%	55.7%	55.7%	20.2%	24.2%	24.2%	24.2%	20.2%	44.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
Lost Time Adjust (s)	-1.6	-1.6	-1.6	-1.6	0.0	-2.4	-2.4	-2.4	0.0	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lag	Lag	Lead	
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	70.5	70.5	70.5	70.5	92.1	25.9	25.9	25.9	51.5	51.5
Actuated g/C Ratio	0.54	0.54	0.54	0.54	0.71	0.20	0.20	0.20	0.40	0.40
v/c Ratio	0.64	0.55	0.07	0.71	0.50	0.86	0.79	0.11	0.93	0.35
Control Delay	57.2	20.8	19.0	25.2	6.9	83.9	65.4	5.3	67.9	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	20.8	19.0	25.2	6.9	83.9	65.4	5.3	67.9	26.2
LOS	E	C	B	C	A	F	E	A	E	C
Approach Delay		23.0		20.2			67.8			50.0
Approach LOS		C		C			E			D

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 79 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 31.2 Intersection LOS: C
 Intersection Capacity Utilization 92.7% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis Background 2026 PM Peak Hour - Sensitivity
3: Proudfoot Lane & Oxford Street West 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	61	821	134	14	1345	505	177	293	35	313	168	66
Future Volume (vph)	61	821	134	14	1345	505	177	293	35	313	168	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.92	1.00	1.00	0.94	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1620	3192		1616	3500	1380	1617	1863	1366	1664	1684	
Fit Permitted	0.10	1.00		0.22	1.00	1.00	0.61	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	176	3192		372	3500	1380	1043	1863	1366	269	1684	
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)	61	821	134	14	1345	505	177	293	35	313	168	66
RTOR Reduction (vph)	0	10	0	0	0	34	0	0	28	0	11	0
Lane Group Flow (vph)	61	945	0	14	1345	471	177	293	7	313	223	0
Conf. Peds. (#/hr)	21		19	19		21	22		32	32		22
Heavy Vehicles (%)	4%	2%	2%	8%	2%	1%	4%	2%	4%	1%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	0
Turn Type	Perm	NA		Perm	NA	custom	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases		2			6	2	4		4	8		
Actuated Green, G (s)	68.9	68.9		68.9	68.9	90.5	23.5	23.5	23.5	49.1	49.1	
Effective Green, g (s)	70.5	70.5		70.5	70.5	90.5	25.9	25.9	25.9	49.1	49.1	
Actuated g/C Ratio	0.54	0.54		0.54	0.54	0.70	0.20	0.20	0.20	0.38	0.40	
Clearance Time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
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)	95	1731		201	1898	960	207	371	272	333	667	
v/s Ratio Prot		0.30			c0.38	0.08		0.16		c0.16	0.13	
v/s Ratio Perm	0.35			0.04		0.26	0.17		0.01	c0.20		
v/c Ratio	0.64	0.55		0.07	0.71	0.49	0.86	0.79	0.03	0.94	0.33	
Uniform Delay, d1	20.9	19.3		14.2	22.1	9.1	50.2	49.5	41.9	36.3	27.3	
Progression Factor	1.00	1.00		1.17	1.02	0.97	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	28.8	1.2		0.5	1.8	0.3	27.4	10.7	0.0	33.5	0.3	
Delay (s)	49.7	20.6		17.1	24.4	9.2	77.7	60.1	41.9	69.8	27.6	
Level of Service	D	C		B	C	A	E	E	D	E	C	
Approach Delay (s)		22.3			20.2			65.0			51.7	
Approach LOS		C			C			E			D	

Intersection Summary
 HCM 2000 Control Delay 30.9 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.80
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 92.7% ICU Level of Service F
 Analysis Period (min) 15

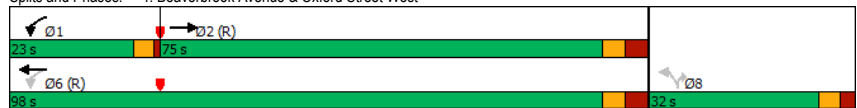
c Critical Lane Group

Timings Background 2026 PM Peak Hour - Sensitivity
4: Beaverbrook Avenue & Oxford Street West 05/28/2021

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖	↑↑	↖	↖
Traffic Volume (vph)	1182	183	1785	32	176
Future Volume (vph)	1182	183	1785	32	176
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases		6		8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	9.0	41.1	31.8	31.8
Total Split (s)	75.0	23.0	98.0	32.0	32.0
Total Split (%)	57.7%	17.7%	75.4%	24.6%	24.6%
Yellow Time (s)	3.5	3.0	3.5	3.3	3.3
All-Red Time (s)	3.6	1.0	3.6	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	4.0	7.1	5.8	5.8
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effct Green (s)	95.1	111.5	108.4	8.7	8.7
Actuated g/C Ratio	0.73	0.86	0.83	0.07	0.07
v/c Ratio	0.49	0.50	0.62	0.28	0.67
Control Delay	5.6	6.7	5.1	62.2	21.1
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	5.6	6.7	5.3	62.2	21.1
LOS	A	A	A	E	C
Approach Delay	5.6		5.4	27.4	
Approach LOS	A		A	C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 64.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis Background 2026 PM Peak Hour - Sensitivity
4: Beaverbrook Avenue & Oxford Street West 05/28/2021

	→	↖	←	↗	↘	
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Volume (vph)	1182	25	183	1785	32	176
Future Volume (vph)	1182	25	183	1785	32	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.3	3.0	3.5	3.3	3.3
Total Lost time (s)	7.1		4.0	7.1	5.8	5.8
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	1.00
Fipb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Fit Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3350		1559	3472	1745	1473
Fit Permitted	1.00		0.20	1.00	0.95	1.00
Satd. Flow (perm)	3350		321	3472	1745	1473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1182	25	183	1785	32	176
RTOR Reduction (vph)	1	0	0	0	0	164
Lane Group Flow (vph)	1206	0	183	1785	32	12
Confl. Peds. (#/hr)		12	12			
Heavy Vehicles (%)	3%	0%	8%	2%	0%	6%
Bus Blockages (#/hr)	4	0	0	4	0	0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases			6		8	8
Actuated Green, G (s)	95.1		108.4	108.4	8.7	8.7
Effective Green, g (s)	95.1		108.4	108.4	8.7	8.7
Actuated g/C Ratio	0.73		0.83	0.83	0.07	0.07
Clearance Time (s)	7.1		4.0	7.1	5.8	5.8
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2450		356	2895	116	98
v/s Ratio Prot	0.36		0.04	c0.51		
v/s Ratio Perm			0.39		c0.02	0.01
v/c Ratio	0.49		0.51	0.62	0.28	0.12
Uniform Delay, d1	7.3		3.9	3.7	57.7	57.0
Progression Factor	0.61		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6		1.3	1.0	1.3	0.6
Delay (s)	5.0		5.2	4.7	59.0	57.6
Level of Service	A		A	A	E	E
Approach Delay (s)	5.0		4.7	57.8		
Approach LOS	A		A	E		

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.9
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Timings Background 2026 PM Peak Hour - Sensitivity
5: Oxford Street West & Cherryhill Boulevard 05/28/2021

	↖	→	↗	←	↖	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↖	↖↗	↖	↖↗	↖	↖	↖
Traffic Volume (vph)	152	1182	8	1692	45	7	185	1	258
Future Volume (vph)	152	1182	8	1692	45	7	185	1	258
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	19.0	87.0	68.0	68.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	15.8%	72.5%	56.7%	56.7%	27.5%	27.5%	27.5%	27.5%	27.5%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	-3.1	-3.1	-3.1	-1.8	-1.8	-1.8	-1.8	-1.8
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	88.2	88.2	73.4	73.4	23.8	23.8	23.8	23.8	23.8
Actuated g/C Ratio	0.74	0.74	0.61	0.61	0.20	0.20	0.20	0.20	0.20
v/c Ratio	0.72	0.49	0.03	0.84	0.18	0.10	0.75	0.00	0.56
Control Delay	43.3	7.9	13.1	25.3	39.4	16.8	63.4	35.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	7.9	13.1	25.3	39.4	16.8	63.4	35.0	12.6
LOS	D	A	B	C	D	B	E	C	B
Approach Delay		11.9		25.2		29.9		33.8	
Approach LOS		B		C		C		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 94 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 21.4 Intersection LOS: C
 Intersection Capacity Utilization 87.0% ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis Background 2026 PM Peak Hour - Sensitivity
5: Oxford Street West & Cherryhill Boulevard 05/28/2021

	↖	→	↗	←	↖	↑	↘	↓	↙			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	152	1182	19	8	1692	45	45	7	26	185	1	258
Future Volume (vph)	152	1182	19	8	1692	45	45	7	26	185	1	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	1.00	0.94
Fipb, ped/bikes	1.00	1.00		0.99	1.00		0.95	1.00		0.96	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.88		1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1677	3346		1693	3375		1626	1592		1613	1837	1400
Fit Permitted	0.05	1.00		0.23	1.00		0.76	1.00		0.74	1.00	1.00
Satd. Flow (perm)	95	3346		418	3375		1296	1592		1249	1837	1400
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)	152	1182	19	8	1692	45	45	7	26	185	1	258
RTOR Reduction (vph)	0	1	0	0	1	0	0	21	0	0	0	181
Lane Group Flow (vph)	152	1200	0	8	1736	0	45	12	0	185	1	77
Conf. Peds. (#/hr)	19		21	21		19	37		28	28		37
Heavy Vehicles (%)	10%	3%	11%	0%	2%	3%	0%	0%	0%	3%	0%	6%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	5
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		6		4		8		8		8
Permitted Phases	2			6		4		8		8		8
Actuated Green, G (s)	85.1	85.1		70.3	70.3		22.0	22.0		22.0	22.0	22.0
Effective Green, g (s)	85.1	88.2		73.4	73.4		23.8	23.8		23.8	23.8	23.8
Actuated g/C Ratio	0.71	0.74		0.61	0.61		0.20	0.20		0.20	0.20	0.20
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	209	2459		255	2064		257	315		247	364	277
v/s Ratio Prot	c0.07	0.36			c0.51		0.01				0.00	
v/s Ratio Perm	0.45			0.02			0.03			c0.15		0.05
v/c Ratio	0.73	0.49		0.03	0.84		0.18	0.04		0.75	0.00	0.28
Uniform Delay, d1	32.7	6.6		9.2	18.6		39.9	38.9		45.3	38.6	40.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.9	0.7		0.2	4.3		0.3	0.1		11.7	0.0	0.5
Delay (s)	44.6	7.3		9.5	23.0		40.3	38.9		57.0	38.6	41.4
Level of Service	D	A		A	C		D	D		E	D	D
Approach Delay (s)		11.5			22.9			39.7				47.9
Approach LOS		B			C			D				D

Intersection Summary

HCM 2000 Control Delay 22.1 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.81
 Actuated Cycle Length (s) 120.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 87.0% ICU Level of Service E
 Analysis Period (min) 15

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis Background 2026 PM Peak Hour - Sensitivity
 Platts Lane & Cherry Hill Place
 05/28/2021

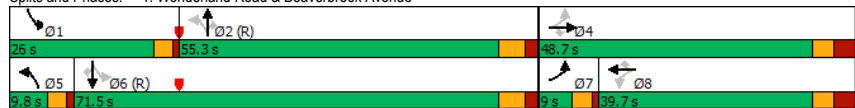
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↔			↔		↔	↔		↔	↔	↔		
Traffic Volume (veh/h)	94	10	73	21	5	13	80	276	31	12	430	87		
Future Volume (Veh/h)	94	10	73	21	5	13	80	276	31	12	430	87		
Sign Control	Stop			Stop			Free			Free				
Grade	0%			0%			0%			0%				
Peak Hour 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)	94	10	73	21	5	13	80	276	31	12	430	87		
Pedestrians	35			19			23			20				
Lane Width (m)	3.7			3.7			3.1			3.5				
Walking Speed (m/s)	1.1			1.1			1.1			1.1				
Percent Blockage	3			2			2			2				
Right turn flare (veh)														
Median type	None						None							
Median storage (veh)														
Upstream signal (m)														
pX, platoon unblocked														
vC, conflicting volume	1004	1018	532	1026	1046	330	552			326				
vC1, stage 1 conf vol														
vC2, stage 2 conf vol														
vCu, unblocked vol	1004	1018	532	1026	1046	330	552			326				
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2			4.7				
tC, 2 stage (s)														
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3			2.7				
p0 queue free %	47	95	86	86	97	98	92			99				
cM capacity (veh/h)	177	205	509	153	198	690	952			956				
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2								
Volume Total	177	39	80	307	12	517								
Volume Left	94	21	80	0	12	0								
Volume Right	73	13	0	31	0	87								
cSH	245	215	952	1700	956	1700								
Volume to Capacity	0.72	0.18	0.08	0.18	0.01	0.30								
Queue Length 95th (m)	37.6	4.9	2.1	0.0	0.3	0.0								
Control Delay (s)	50.6	25.4	9.1	0.0	8.8	0.0								
Lane LOS	F	D	A		A									
Approach Delay (s)	50.6	25.4	1.9		0.2									
Approach LOS	F	D												
Intersection Summary														
Average Delay			9.5											
Intersection Capacity Utilization			56.3%		ICU Level of Service								B	
Analysis Period (min)			15											

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Background 2035 AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘				
Traffic Volume (vph)	177	179	168	32	61	199	78	1138	41	295	1352	106				
Future Volume (vph)	177	179	168	32	61	199	78	1138	41	295	1352	106				
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm				
Protected Phases	7	4			8		5	2		1	6					
Permitted Phases	4		4	8		8	2		2	6		6				
Detector Phase	7	4	4	8	8	8	5	2	2	1	6	6				
Switch Phase																
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0				
Minimum Split (s)	9.0	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3				
Total Split (s)	9.0	48.7	48.7	39.7	39.7	39.7	9.8	55.3	55.3	26.0	71.5	71.5				
Total Split (%)	6.9%	37.5%	37.5%	30.5%	30.5%	30.5%	7.5%	42.5%	42.5%	20.0%	55.0%	55.0%				
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1				
All-Red Time (s)	1.0	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2				
Lost Time Adjust (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				
Total Lost Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3				
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max				
Act Effct Green (s)	30.0	27.3	27.3	18.3	18.3	18.3	72.9	64.4	64.4	92.0	81.5	81.5				
Actuated g/C Ratio	0.23	0.21	0.21	0.14	0.14	0.14	0.56	0.50	0.50	0.71	0.63	0.63				
v/c Ratio	0.70	0.47	0.42	0.20	0.24	0.53	0.37	0.67	0.05	0.73	0.62	0.13				
Control Delay	57.5	47.0	15.6	46.6	47.6	10.6	15.8	30.0	0.1	29.5	19.2	4.0				
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	57.5	47.0	15.6	46.6	47.6	10.6	15.8	30.0	0.1	29.5	19.2	4.0				
LOS	E	D	B	D	D	B	B	C	A	C	B	A				
Approach Delay	40.5				22.3				28.2				20.0			
Approach LOS	D				C				C				C			

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 115	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 25.7	Intersection LOS: C
Intersection Capacity Utilization 89.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Wonderland Road & Beaverbrook Avenue



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Background 2035 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘				
Traffic Volume (vph)	177	179	168	32	61	199	78	1138	41	295	1352	106				
Future Volume (vph)	177	179	168	32	61	199	78	1138	41	295	1352	106				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0				
Total Lost time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00				
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.94				
Fipb, ped/bikes	0.98	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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				
Fit 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)	1618	1807	1478	1663	1773	1436	1530	3433	1422	1652	3500	1286				
Fit Permitted	0.59	1.00	1.00	0.64	1.00	1.00	0.17	1.00	1.00	0.14	1.00	1.00				
Satd. Flow (perm)	1003	1807	1478	1128	1773	1436	276	3433	1422	241	3500	1286				
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)	177	179	168	32	61	199	78	1138	41	295	1352	106				
RTOR Reduction (vph)	0	0	93	0	0	171	0	0	21	0	0	37				
Lane Group Flow (vph)	177	179	75	32	61	28	78	1138	20	295	1352	69				
Conf. Peds. (#/hr)	35		14	14		35	17		15	15		17				
Heavy Vehicles (%)	2%	4%	5%	0%	6%	3%	10%	4%	0%	2%	2%	10%				
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm				
Protected Phases	7	4			8		5	2		1	6					
Permitted Phases	4		4	8		8	2		2	6		6				
Actuated Green, G (s)	27.3	27.3	27.3	18.3	18.3	18.3	69.4	64.4	64.4	89.7	80.7	80.7				
Effective Green, g (s)	27.3	27.3	27.3	18.3	18.3	18.3	69.4	64.4	64.4	89.7	80.7	80.7				
Actuated g/C Ratio	0.21	0.21	0.21	0.14	0.14	0.14	0.53	0.50	0.50	0.69	0.62	0.62				
Clearance Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	234	379	310	158	249	202	195	1700	704	397	2172	798				
v/s Ratio Prot	c0.03	0.10			0.03		0.02	0.33		c0.12	0.39					
v/s Ratio Perm	c0.13		0.05	0.03		0.02	0.20		0.01	c0.39		0.05				
v/c Ratio	0.76	0.47	0.24	0.20	0.24	0.14	0.40	0.67	0.03	0.74	0.62	0.09				
Uniform Delay, d1	48.5	45.0	42.7	49.4	49.7	48.9	15.4	24.8	16.8	22.3	15.2	9.9				
Progression 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				
Incremental Delay, d2	13.0	0.9	0.4	0.6	0.5	0.3	1.3	2.1	0.1	7.3	1.4	0.2				
Delay (s)	61.6	46.0	43.1	50.0	50.2	49.3	16.7	26.9	16.9	29.6	16.6	10.1				
Level of Service	E	D	D	D	D	D	B	C	B	C	B	B				
Approach Delay (s)	50.3				49.5				25.9				18.4			
Approach LOS	D				D				C				B			

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Timings Future Background 2035 AM Peak Hour
3: Proudfoot Lane & Oxford Street West 05/28/2021

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	82	1448	10	783	211	120	162	54	361	85
Future Volume (vph)	82	1448	10	783	211	120	162	54	361	85
Turn Type	pm+pt	NA	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		6	3	7	4		3	8
Permitted Phases	2		6		6	4		4	8	
Detector Phase	5	2	6	6	3	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	4.5	7.0	7.0	5.0	7.0
Minimum Split (s)	9.0	23.6	23.6	23.6	9.5	9.0	31.4	31.4	9.5	31.4
Total Split (s)	10.0	72.4	62.4	62.4	26.0	11.0	31.6	31.6	26.0	46.6
Total Split (%)	7.7%	55.7%	48.0%	48.0%	20.0%	8.5%	24.3%	24.3%	20.0%	35.8%
Yellow Time (s)	3.0	3.7	3.7	3.7	3.0	3.0	3.3	3.3	3.0	3.3
All-Red Time (s)	1.0	1.9	1.9	1.9	1.0	1.0	3.1	3.1	1.0	3.1
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)	4.0	5.6	5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4
Lead/Lag	Lead		Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	76.3	74.7	63.3	63.3	86.8	26.9	17.5	17.5	45.7	32.3
Actuated g/C Ratio	0.59	0.57	0.49	0.49	0.67	0.21	0.13	0.13	0.35	0.25
v/c Ratio	0.24	0.81	0.13	0.48	0.21	0.46	0.68	0.18	0.90	0.32
Control Delay	14.8	27.1	17.4	13.9	0.6	37.8	66.8	1.4	62.0	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	27.1	17.4	13.9	0.6	37.8	66.8	1.4	62.0	34.5
LOS	B	C	B	B	A	D	E	A	E	C
Approach Delay		26.4		11.2			45.9			54.9
Approach LOS		C		B			D			D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 27.9	Intersection LOS: C
Intersection Capacity Utilization 97.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis Future Background 2035 AM Peak Hour
3: Proudfoot Lane & Oxford Street West 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	82	1448	66	10	783	211	120	162	54	361	85	41
Future Volume (vph)	82	1448	66	10	783	211	120	162	54	361	85	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	4.0	5.6		5.6	5.6	4.0	6.4	6.4	4.0	6.4		6.4
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00		1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00		0.99
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.99		1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00		0.95
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1685	3271		1517	3368	1420	1613	1792	1384	1643		1552
Fit Permitted	0.26	1.00		0.10	1.00	1.00	0.68	1.00	1.00	0.39		1.00
Satd. Flow (perm)	459	3271		156	3368	1420	1148	1792	1384	672		1552
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)	82	1448	66	10	783	211	120	162	54	361	85	41
RTOR Reduction (vph)	0	2	0	0	0	50	0	0	47	0	14	0
Lane Group Flow (vph)	82	1512	0	10	783	161	120	162	7	361	112	0
Conf. Peds. (#/hr)	2		5	5		2	10		15	15		10
Heavy Vehicles (%)	0%	2%	6%	15%	6%	4%	6%	6%	5%	2%	19%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Turn Type	pm+pt	NA		Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		6	3	7	4		3	8		
Permitted Phases	2			6		6	4		4	8		
Actuated Green, G (s)	74.6	74.6		63.2	63.2	85.1	24.5	17.5	17.5	43.4		32.4
Effective Green, g (s)	74.6	74.6		63.2	63.2	85.1	24.5	17.5	17.5	43.4		32.4
Actuated g/C Ratio	0.57	0.57		0.49	0.49	0.65	0.19	0.13	0.13	0.33		0.25
Clearance Time (s)	4.0	5.6		5.6	5.6	4.0	6.4	6.4	4.0	6.4		6.4
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)	333	1877		75	1637	929	241	241	186	387		386
v/s Ratio Prot	0.01	c0.46			0.23	0.03	0.03	0.09		c0.16		0.07
v/s Ratio Perm	0.13			0.06		0.08	0.07		0.01	c0.15		
v/c Ratio	0.25	0.81		0.13	0.48	0.17	0.50	0.67	0.04	0.93		0.29
Uniform Delay, d1	13.9	22.0		18.4	22.4	8.7	46.3	53.5	48.9	38.3		39.5
Progression Factor	1.00	1.00		0.60	0.56	0.06	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	0.4	3.8		3.5	1.0	0.1	1.6	7.2	0.1	29.2		0.4
Delay (s)	14.3	25.8		14.5	13.4	0.6	47.9	60.7	49.0	67.5		39.9
Level of Service	B	C		B	B	A	D	E	D	E		D
Approach Delay (s)		25.2			10.7			54.3				60.4
Approach LOS		C			B			D				E

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Timings
4: Beaverbrook Avenue & Oxford Street West

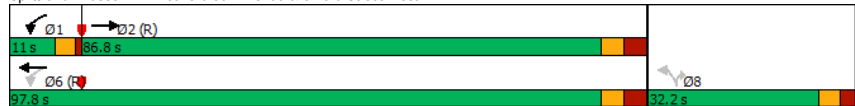
Future Background 2035 AM Peak Hour
05/28/2021

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖	↑↑	↖	↖
Traffic Volume (vph)	1754	92	959	23	230
Future Volume (vph)	1754	92	959	23	230
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases		6		8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	9.0	41.1	31.8	31.8
Total Split (s)	86.8	11.0	97.8	32.2	32.2
Total Split (%)	66.8%	8.5%	75.2%	24.8%	24.8%
Yellow Time (s)	3.5	3.0	3.5	3.3	3.3
All-Red Time (s)	3.6	1.0	3.6	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	4.0	7.1	5.8	5.8
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effct Green (s)	89.2	103.2	100.1	17.0	17.0
Actuated g/C Ratio	0.69	0.79	0.77	0.13	0.13
v/c Ratio	0.77	0.58	0.37	0.10	0.81
Control Delay	8.6	26.3	7.7	46.8	49.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	26.3	7.7	46.8	49.7
LOS	A	C	A	D	D
Approach Delay	8.6		9.3	49.5	
Approach LOS	A		A	D	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 12.2 Intersection LOS: B
 Intersection Capacity Utilization 73.6% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Background 2035 AM Peak Hour
05/28/2021

	→	↖	←	↗	↘	
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↖
Traffic Volume (vph)	1754	29	92	959	23	230
Future Volume (vph)	1754	29	92	959	23	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.3	3.0	3.5	3.3	3.3
Total Lost time (s)	7.1		4.0	7.1	5.8	5.8
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	1.00
Fipb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Fit Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3382		1465	3341	1745	1446
Fit Permitted	1.00		0.07	1.00	0.95	1.00
Satd. Flow (perm)	3382		111	3341	1745	1446
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1754	29	92	959	23	230
RTOR Reduction (vph)	1	0	0	0	0	94
Lane Group Flow (vph)	1782	0	92	959	23	136
Confl. Peds. (#/hr)		7	7			
Heavy Vehicles (%)	2%	6%	15%	6%	0%	8%
Bus Blockages (#/hr)	4	0	0	4	0	0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases			6		8	8
Actuated Green, G (s)	89.2		100.1	100.1	17.0	17.0
Effective Green, g (s)	89.2		100.1	100.1	17.0	17.0
Actuated g/C Ratio	0.69		0.77	0.77	0.13	0.13
Clearance Time (s)	7.1		4.0	7.1	5.8	5.8
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2320		157	2572	228	189
v/s Ratio Prot	c0.53		c0.03	0.29		
v/s Ratio Perm			0.42		0.01	c0.09
v/c Ratio	0.77		0.59	0.37	0.10	0.72
Uniform Delay, d1	13.5		15.8	4.8	49.8	54.2
Progression Factor	0.47		1.23	1.31	1.00	1.00
Incremental Delay, d2	1.4		5.1	0.4	0.2	12.7
Delay (s)	7.8		24.7	6.7	50.0	66.9
Level of Service	A		C	A	D	E
Approach Delay (s)	7.8		8.3	65.3		
Approach LOS	A		A	E		

Intersection Summary

HCM 2000 Control Delay 12.7 HCM 2000 Level of Service B
 HCM 2000 Volume to Capacity ratio 0.75
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 16.9
 Intersection Capacity Utilization 73.6% ICU Level of Service D
 Analysis Period (min) 15

c Critical Lane Group

Timings Future Background 2035 AM Peak Hour
5: Oxford Street West & Cherryhill Boulevard 05/28/2021

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	166	1639	26	892	18	3	71	22	102
Future Volume (vph)	166	1639	26	892	18	3	71	22	102
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	16.0	95.0	79.0	79.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	12.3%	73.1%	60.8%	60.8%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	103.7	100.6	87.8	87.8	16.5	16.5	16.5	16.5	16.5
Actuated g/C Ratio	0.80	0.77	0.68	0.68	0.13	0.13	0.13	0.13	0.13
v/c Ratio	0.38	0.66	0.18	0.44	0.12	0.07	0.47	0.09	0.40
Control Delay	8.1	17.7	15.0	11.9	47.1	23.7	60.2	46.3	12.7
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	17.8	15.0	11.9	47.1	23.7	60.2	46.3	12.7
LOS	A	B	B	B	D	C	E	D	B
Approach Delay	16.9		11.9		36.4		33.8		
Approach LOS	B		B		D		C		

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 91 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 16.6 Intersection LOS: B
 Intersection Capacity Utilization 86.7% ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis Future Background 2035 AM Peak Hour
5: Oxford Street West & Cherryhill Boulevard 05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	166	1639	81	26	892	59	18	3	12	71	22	102
Future Volume (vph)	166	1639	81	26	892	59	18	3	12	71	22	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	1.00	
Fipb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		0.93	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	1.00	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1660	3359		1702	3221		1563	1538		1505	1837	1324
Fit Permitted	0.26	1.00		0.12	1.00		0.74	1.00		0.75	1.00	
Satd. Flow (perm)	450	3359		220	3221		1223	1538		1185	1837	1324
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)	166	1639	81	26	892	59	18	3	12	71	22	102
RTOR Reduction (vph)	0	2	0	0	3	0	0	10	0	0	0	89
Lane Group Flow (vph)	166	1718	0	26	948	0	18	5	0	71	22	13
Conf. Peds. (#/hr)	17		11	11		17	42		51	51		42
Heavy Vehicles (%)	11%	2%	5%	0%	6%	8%	6%	0%	0%	6%	0%	13%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	100.6	100.6		87.8	87.8		16.5	16.5		16.5	16.5	16.5
Effective Green, g (s)	100.6	100.6		87.8	87.8		16.5	16.5		16.5	16.5	16.5
Actuated g/C Ratio	0.77	0.77		0.68	0.68		0.13	0.13		0.13	0.13	0.13
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	430	2599		148	2175		155	195		150	233	168
v/s Ratio Prot	0.03	c0.51			0.29			0.00			0.01	
v/s Ratio Perm	0.27			0.12			0.01			c0.06		0.01
v/c Ratio	0.39	0.66		0.18	0.44		0.12	0.02		0.47	0.09	0.08
Uniform Delay, d1	4.7	6.8		7.8	9.7		50.3	49.7		52.7	50.1	50.0
Progression Factor	1.63	2.04		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.9		2.6	0.6		0.3	0.0		2.3	0.2	0.2
Delay (s)	8.0	14.7		10.3	10.3		50.6	49.7		55.1	50.3	50.2
Level of Service	A	B		B	B		D	D		E	D	D
Approach Delay (s)	14.1				10.3		50.2				52.0	
Approach LOS	B				B		D				D	

Intersection Summary

HCM 2000 Control Delay 15.7 HCM 2000 Level of Service B
 HCM 2000 Volume to Capacity ratio 0.66
 Actuated Cycle Length (s) 130.0 Sum of lost time (s) 16.9
 Intersection Capacity Utilization 86.7% ICU Level of Service E
 Analysis Period (min) 15

c Critical Lane Group

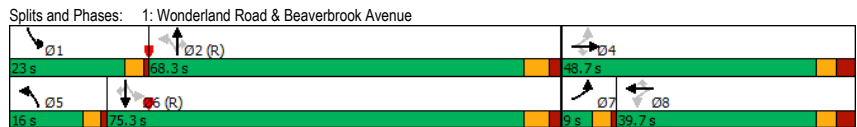
HCM Unsignalized Intersection Capacity Analysis Future Background 2035 AM Peak Hour
 6: Platt's Lane & Cherryhill Place 05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	107	4	77	39	11	18	65	313	12	10	333	82
Future Volume (Veh/h)	107	4	77	39	11	18	65	313	12	10	333	82
Sign Control		Stop			Stop			Free			Free	
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)	107	4	77	39	11	18	65	313	12	10	333	82
Pedestrians		16			20			25			11	
Lane Width (m)		3.7			3.7			3.1			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			2			2			1	
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	888	885	415	926	920	350	431			345		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	888	885	415	926	920	350	431			345		
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	51	98	87	80	96	97	94			99		
cM capacity (veh/h)	217	258	607	190	246	678	1081			1202		
Direction_Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	188	68	65	325	10	415						
Volume Left	107	39	65	0	10	0						
Volume Right	77	18	0	12	0	82						
cSH	296	246	1081	1700	1202	1700						
Volume to Capacity	0.63	0.28	0.06	0.19	0.01	0.24						
Queue Length 95th (m)	30.6	8.3	1.5	0.0	0.2	0.0						
Control Delay (s)	36.1	25.1	8.5	0.0	8.0	0.0						
Lane LOS	E	D	A		A							
Approach Delay (s)	36.1	25.1	1.4		0.2							
Approach LOS	E	D										
Intersection Summary												
Average Delay			8.5									
Intersection Capacity Utilization			49.8%		ICU Level of Service					A		
Analysis Period (min)			15									

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Background 2035 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	118	174	196	85	311	421	242	1415	65	296	1720	317
Future Volume (vph)	118	174	196	85	311	421	242	1415	65	296	1720	317
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	9.0	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.0	32.3	32.3
Total Split (s)	9.0	48.7	48.7	39.7	39.7	39.7	16.0	68.3	68.3	23.0	75.3	75.3
Total Split (%)	6.4%	34.8%	34.8%	28.4%	28.4%	28.4%	11.4%	48.8%	48.8%	16.4%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	1.0	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	40.1	37.4	37.4	28.4	28.4	28.4	80.9	62.1	62.1	91.9	69.0	69.0
Actuated g/C Ratio	0.29	0.27	0.27	0.20	0.20	0.20	0.58	0.44	0.44	0.66	0.49	0.49
v/c Ratio	0.79	0.36	0.37	0.38	0.83	0.89	0.98	0.90	0.10	0.89	1.00	0.44
Control Delay	75.1	43.0	9.1	52.2	72.2	46.1	92.7	45.5	0.3	69.0	56.3	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	75.1	43.0	9.1	52.2	72.2	46.1	92.7	45.5	0.3	69.0	56.3	13.0
LOS	E	D	A	D	E	D	F	D	A	E	E	B
Approach Delay		37.1			56.7			50.4			52.0	
Approach LOS		D			E			D			D	

Intersection Summary
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 145
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 50.9
 Intersection LOS: D
 Intersection Capacity Utilization 108.5%
 ICU Level of Service G
 Analysis Period (min) 15




HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Background 2035 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	118	174	196	85	311	421	242	1415	65	296	1720	317
Future Volume (vph)	118	174	196	85	311	421	242	1415	65	296	1720	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	1.00	0.92	1.00	1.00	0.89
Fipb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1663	1789	1496	1609	1842	1467	1668	3535	1382	1668	3500	1295
Fit Permitted	0.21	1.00	1.00	0.65	1.00	1.00	0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	364	1789	1496	1096	1842	1467	113	3535	1382	106	3500	1295
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)	118	174	196	85	311	421	242	1415	65	296	1720	317
RTOR Reduction (vph)	0	0	129	0	177	0	0	36	0	0	80	0
Lane Group Flow (vph)	118	174	67	85	311	244	242	1415	29	296	1720	237
Conf. Peds. (#/hr)	31		26	26		31	36		24	24		36
Heavy Vehicles (%)	1%	5%	2%	2%	2%	1%	1%	1%	0%	1%	2%	3%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	37.4	37.4	37.4	28.4	28.4	28.4	78.7	62.1	62.1	89.6	69.0	69.0
Effective Green, g (s)	37.4	37.4	37.4	28.4	28.4	28.4	78.7	62.1	62.1	89.6	69.0	69.0
Actuated g/C Ratio	0.27	0.27	0.27	0.20	0.20	0.20	0.56	0.44	0.44	0.64	0.49	0.49
Clearance Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	143	477	399	222	373	297	247	1568	613	330	1725	638
v/s Ratio Prot	c0.03	0.10			0.17		0.12	0.40		c0.15	c0.49	
v/s Ratio Perm	c0.19		0.04	0.08		0.17	0.43		0.02	0.42		0.18
v/c Ratio	0.83	0.36	0.17	0.38	0.83	0.82	0.98	0.90	0.05	0.90	1.00	0.37
Uniform Delay, d1	48.7	41.7	39.4	48.2	53.5	53.4	46.7	36.1	22.1	45.4	35.4	22.0
Progression 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
Incremental Delay, d2	30.5	0.5	0.2	1.1	14.7	16.5	50.9	8.8	0.1	25.3	21.0	1.7
Delay (s)	79.2	42.1	39.6	49.3	68.3	69.9	97.6	45.0	22.3	70.7	56.4	23.7
Level of Service	E	D	D	D	E	E	F	D	C	E	E	C
Approach Delay (s)		50.1			67.1			51.5			53.8	
Approach LOS		D			E			D			D	

Intersection Summary
 HCM 2000 Control Delay 54.7
 HCM 2000 Level of Service D
 HCM 2000 Volume to Capacity ratio 0.97
 Actuated Cycle Length (s) 140.0
 Sum of lost time (s) 21.0
 Intersection Capacity Utilization 108.5%
 ICU Level of Service G
 Analysis Period (min) 15
 c Critical Lane Group

Timings
3: Proudfoot Lane & Oxford Street West

Future Background 2035 PM Peak Hour
05/28/2021

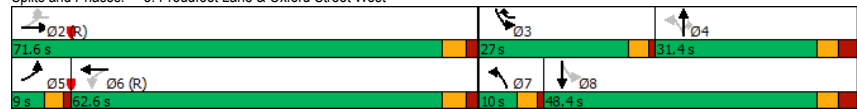


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	68	906	17	1485	559	197	324	40	346	187
Future Volume (vph)	68	906	17	1485	559	197	324	40	346	187
Turn Type	pm+pt	NA	Perm	NA	custom	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		6	3	7	4		3	8
Permitted Phases	2		6	2	4	4		4	8	
Detector Phase	5	2	6	6	3	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	7.0	7.0	5.0	7.0
Minimum Split (s)	9.0	23.6	23.6	23.6	9.0	9.0	31.4	31.4	9.0	31.4
Total Split (s)	9.0	71.6	62.6	62.6	27.0	10.0	31.4	31.4	27.0	48.4
Total Split (%)	6.9%	55.1%	48.2%	48.2%	20.8%	7.7%	24.2%	24.2%	20.8%	37.2%
Yellow Time (s)	3.0	3.7	3.7	3.7	3.0	3.0	3.3	3.3	3.0	3.3
All-Red Time (s)	1.0	1.9	1.9	1.9	1.0	1.0	3.1	3.1	1.0	3.1
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)	4.0	5.6	5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4
Lead/Lag	Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	68.2	66.6	59.4	59.4	91.2	32.8	24.4	24.4	53.8	41.4
Actuated g/C Ratio	0.52	0.51	0.46	0.46	0.70	0.25	0.19	0.19	0.41	0.32
v/c Ratio	0.58	0.64	0.11	0.93	0.56	0.69	0.93	0.11	0.97	0.48
Control Delay	37.0	24.9	20.0	38.7	5.1	48.2	85.1	0.7	76.7	36.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	24.9	20.0	38.7	5.1	48.2	85.1	0.7	76.7	36.6
LOS	D	C	B	D	A	D	F	A	E	D
Approach Delay		25.6		29.4			66.2			59.5
Approach LOS		C		C			E			E

Intersection Summary

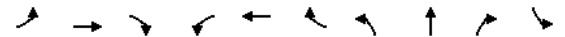
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 37.4 Intersection LOS: D
Intersection Capacity Utilization 100.6% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Future Background 2035 PM Peak Hour
05/28/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	906	150	17	1485	559	197	324	40	346	187	73
Future Volume (vph)	68	906	150	17	1485	559	197	324	40	346	187	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	4.0	5.6		5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.93	1.00	1.00	0.94	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1620	3191		1600	3500	1383	1636	1863	1366	1665	1684	
Fit Permitted	0.06	1.00		0.20	1.00	1.00	0.60	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	109	3191		342	3500	1383	1030	1863	1366	265	1684	
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)	68	906	150	17	1485	559	197	324	40	346	187	73
RTOR Reduction (vph)	0	10	0	0	0	23	0	0	32	0	11	0
Lane Group Flow (vph)	68	1046	0	17	1485	536	197	324	8	346	249	0
Conf. Peds. (#/hr)	21		19	19		21	22		32	32		22
Heavy Vehicles (%)	4%	2%	2%	8%	2%	1%	4%	2%	4%	1%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	0
Turn Type	pm+pt	NA		Perm	NA	custom	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		6	3	7	4		3	8		
Permitted Phases	2			6	2	4	4		4	8		
Actuated Green, G (s)	66.6	66.6		58.6	58.6	89.6	30.4	24.4	24.4	51.4	41.4	
Effective Green, g (s)	66.6	66.6		58.6	58.6	89.6	30.4	24.4	24.4	51.4	41.4	
Actuated g/C Ratio	0.51	0.51		0.45	0.45	0.69	0.23	0.19	0.19	0.40	0.32	
Clearance Time (s)	4.0	5.6		5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4	
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)	102	1634		154	1577	953	268	349	256	352	536	
v/s Ratio Prot	0.02	c0.33			c0.42	0.10	0.03	0.17		c0.17	0.15	
v/s Ratio Perm	0.32			0.05		0.29	0.14		0.01	c0.21		
v/c Ratio	0.67	0.64		0.11	0.94	0.56	0.74	0.93	0.03	0.98	0.46	
Uniform Delay, d1	28.1	23.0		20.6	34.1	10.3	44.6	51.9	43.1	37.6	35.4	
Progression Factor	1.00	1.00		0.83	0.87	0.47	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.2	1.9		1.1	10.0	0.6	10.0	30.1	0.0	43.1	0.6	
Delay (s)	43.4	24.9		18.3	39.7	5.4	54.6	82.1	43.2	80.7	36.1	
Level of Service	D	C		B	D	A	D	F	D	F	D	
Approach Delay (s)		26.1			30.2			69.6			61.5	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay 38.6 HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio 0.98
Actuated Cycle Length (s) 130.0 Sum of lost time (s) 20.0
Intersection Capacity Utilization 100.6% ICU Level of Service G
Analysis Period (min) 15
c Critical Lane Group

Timings
4: Beaverbrook Avenue & Oxford Street West

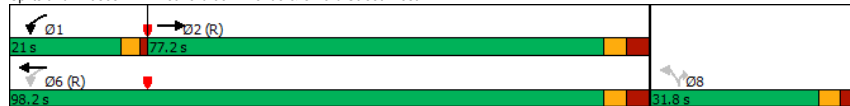
Future Background 2035 PM Peak Hour
05/28/2021

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↖	↑↑	↗	↘
Traffic Volume (vph)	1306	200	1972	35	195
Future Volume (vph)	1306	200	1972	35	195
Turn Type	NA	pm+pt	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases		6		8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	9.0	41.1	31.8	31.8
Total Split (s)	77.2	21.0	98.2	31.8	31.8
Total Split (%)	59.4%	16.2%	75.5%	24.5%	24.5%
Yellow Time (s)	3.5	3.0	3.5	3.3	3.3
All-Red Time (s)	3.6	1.0	3.6	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	4.0	7.1	5.8	5.8
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	None	None
Act Effct Green (s)	92.8	111.3	108.2	8.9	8.9
Actuated g/C Ratio	0.71	0.86	0.83	0.07	0.07
v/c Ratio	0.56	0.59	0.68	0.29	0.69
Control Delay	7.7	10.7	6.1	62.3	20.7
Queue Delay	0.0	0.0	0.3	0.0	0.0
Total Delay	7.7	10.7	6.4	62.3	20.7
LOS	A	B	A	E	C
Approach Delay	7.7		6.8	27.0	
Approach LOS	A		A	C	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 8.4
 Intersection LOS: A
 Intersection Capacity Utilization 69.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Background 2035 PM Peak Hour
05/28/2021

	→	↖	←	↗	↘	
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↗	↘
Traffic Volume (vph)	1306	28	200	1972	35	195
Future Volume (vph)	1306	28	200	1972	35	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.3	3.3	3.0	3.5	3.3	3.3
Total Lost time (s)	7.1		4.0	7.1	5.8	5.8
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frbp, ped/bikes	1.00		1.00	1.00	1.00	1.00
Fipb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Fit Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3349		1559	3472	1745	1473
Fit Permitted	1.00		0.16	1.00	0.95	1.00
Satd. Flow (perm)	3349		265	3472	1745	1473
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1306	28	200	1972	35	195
RTOR Reduction (vph)	1	0	0	0	0	182
Lane Group Flow (vph)	1333	0	200	1972	35	13
Conf. Peds. (#/hr)			12			
Heavy Vehicles (%)	3%	0%	8%	2%	0%	6%
Bus Blockages (#/hr)	4	0	0	4	0	0
Turn Type	NA		pm+pt	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases			6		8	8
Actuated Green, G (s)	92.8		108.2	108.2	8.9	8.9
Effective Green, g (s)	92.8		108.2	108.2	8.9	8.9
Actuated g/C Ratio	0.71		0.83	0.83	0.07	0.07
Clearance Time (s)	7.1		4.0	7.1	5.8	5.8
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2390		334	2889	119	100
v/s Ratio Prot	0.40		0.05	c0.57		
v/s Ratio Perm			0.45		c0.02	0.01
v/c Ratio	0.56		0.60	0.68	0.29	0.13
Uniform Delay, d1	8.8		6.2	4.2	57.6	56.9
Progression Factor	0.70		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		2.9	1.3	1.4	0.6
Delay (s)	6.9		9.0	5.6	58.9	57.5
Level of Service	A		A	A	E	E
Approach Delay (s)	6.9		5.9	57.7		
Approach LOS	A		A	E		

Intersection Summary

HCM 2000 Control Delay 9.4
 HCM 2000 Volume to Capacity ratio 0.68
 Actuated Cycle Length (s) 130.0
 Intersection Capacity Utilization 69.4%
 Analysis Period (min) 15
 HCM 2000 Level of Service A
 Sum of lost time (s) 16.9
 ICU Level of Service C

c Critical Lane Group

Timings
5: Oxford Street West & Cherryhill Boulevard

Future Background 2035 PM Peak Hour
05/28/2021

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	169	1305	8	1865	45	7	205	1	286
Future Volume (vph)	169	1305	8	1865	45	7	205	1	286
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	13.0	87.9	74.9	74.9	32.1	32.1	32.1	32.1	32.1
Total Split (%)	10.8%	73.3%	62.4%	62.4%	26.8%	26.8%	26.8%	26.8%	26.8%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	87.0	83.9	69.9	69.9	23.2	23.2	23.2	23.2	23.2
Actuated g/C Ratio	0.72	0.70	0.58	0.58	0.19	0.19	0.19	0.19	0.19
v/c Ratio	0.84	0.57	0.04	0.97	0.18	0.10	0.85	0.00	0.75
Control Delay	61.5	10.6	12.4	40.1	40.7	17.6	76.4	37.0	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	10.6	12.4	40.1	40.7	17.6	76.4	37.0	36.0
LOS	E	B	B	D	D	B	E	D	D
Approach Delay		16.3		40.0		30.9		52.8	
Approach LOS		B		D		C		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 94 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 32.6
 Intersection LOS: C
 Intersection Capacity Utilization 97.3%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Future Background 2035 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	169	1305	19	8	1865	51	45	7	26	205	1	286
Future Volume (vph)	169	1305	19	8	1865	51	45	7	26	205	1	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	1.00	0.94
Fipb, ped/bikes	1.00	1.00		0.99	1.00		0.95	1.00		0.96	1.00	1.00
Fit	1.00	1.00		1.00	1.00		1.00	0.88		1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1677	3347		1695	3375		1626	1592		1613	1837	1400
Fit Permitted	0.05	1.00		0.20	1.00		0.76	1.00		0.74	1.00	1.00
Satd. Flow (perm)	96	3347		361	3375		1296	1592		1249	1837	1400
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)	169	1305	19	8	1865	51	45	7	26	205	1	286
RTOR Reduction (vph)	0	1	0	0	2	0	0	21	0	0	0	111
Lane Group Flow (vph)	169	1323	0	8	1914	0	45	12	0	205	1	175
Conf. Peds. (#/hr)	19		21	21		19	37		28	28		37
Heavy Vehicles (%)	10%	3%	11%	0%	2%	3%	0%	0%	0%	3%	0%	6%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	5
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		6		6		4		8		8
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	83.9	83.9		69.9	69.9		23.2	23.2		23.2	23.2	23.2
Effective Green, g (s)	83.9	83.9		69.9	69.9		23.2	23.2		23.2	23.2	23.2
Actuated g/C Ratio	0.70	0.70		0.58	0.58		0.19	0.19		0.19	0.19	0.19
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	198	2340		210	1965		250	307		241	355	270
v/s Ratio Prot	c0.07	0.40			c0.57		0.01			0.00		
v/s Ratio Perm	0.53			0.02			0.03			c0.16		0.13
v/c Ratio	0.85	0.57		0.04	0.97		0.18	0.04		0.85	0.00	0.65
Uniform Delay, d1	37.7	9.0		10.7	24.2		40.5	39.3		46.7	39.1	44.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	28.2	1.0		0.3	15.1		0.3	0.1		23.9	0.0	5.3
Delay (s)	65.9	10.0		11.0	39.2		40.8	39.4		70.6	39.1	50.0
Level of Service	E	A		B	D		D	D		E	D	D
Approach Delay (s)		16.3			39.1			40.2				58.5
Approach LOS		B			D			D				E

Intersection Summary

HCM 2000 Control Delay 33.0
 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.93
 Actuated Cycle Length (s) 120.0
 Sum of lost time (s) 16.9
 Intersection Capacity Utilization 97.3%
 ICU Level of Service F
 Analysis Period (min) 15

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis Future Background 2035 PM Peak Hour
 6: Platt's Lane & Cherryhill Place 05/28/2021



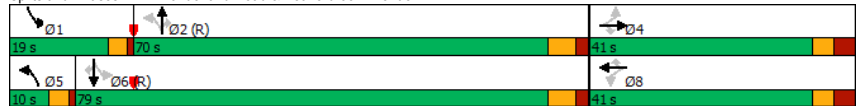
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	103	10	81	21	5	13	88	302	31	12	469	96
Future Volume (Veh/h)	103	10	81	21	5	13	88	302	31	12	469	96
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	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)	103	10	81	21	5	13	88	302	31	12	469	96
Pedestrians		35			19			23			20	
Lane Width (m)		3.7			3.7			3.1			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		3			2			2			2	
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1090	1104	575	1114	1136	356	600			352		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1090	1104	575	1114	1136	356	600			352		
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2			4.7		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3			2.7		
p0 queue free %	32	94	83	83	97	98	90			99		
cM capacity (veh/h)	152	180	481	127	173	668	913			933		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	194	39	88	333	12	565						
Volume Left	103	21	88	0	12	0						
Volume Right	81	13	0	31	0	96						
cSH	216	182	913	1700	933	1700						
Volume to Capacity	0.90	0.21	0.10	0.20	0.01	0.33						
Queue Length 95th (m)	55.4	5.9	2.4	0.0	0.3	0.0						
Control Delay (s)	84.4	30.0	9.4	0.0	8.9	0.0						
Lane LOS	F	D	A		A							
Approach Delay (s)	84.4	30.0	2.0		0.2							
Approach LOS	F	D										
Intersection Summary												
Average Delay			15.0									
Intersection Capacity Utilization			60.5%		ICU Level of Service					B		
Analysis Period (min)			15									

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Total 2026 AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	160	170	151	28	64	179	69	1029	36	266	1222	95
Future Volume (vph)	160	170	151	28	64	179	69	1029	36	266	1222	95
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		8		2		6	
Permitted Phases		4		4	8		8		2		6	
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	41.0	41.0	41.0	41.0	41.0	41.0	10.0	70.0	70.0	19.0	79.0	79.0
Total Split (%)	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	7.7%	53.8%	53.8%	14.6%	60.8%	60.8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	24.3	24.3	24.3	24.3	24.3	24.3	84.8	75.8	75.8	95.0	83.9	83.9
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.65	0.58	0.58	0.73	0.65	0.65
v/c Ratio	0.72	0.50	0.39	0.16	0.19	0.43	0.26	0.51	0.04	0.68	0.54	0.11
Control Delay	66.2	51.1	11.2	42.6	43.0	8.7	9.6	19.2	0.1	16.9	15.5	3.8
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	66.2	51.1	11.2	42.6	43.0	8.7	9.6	19.2	0.1	16.9	15.5	3.8
LOS	E	D	B	D	D	A	A	B	A	B	B	A
Approach Delay	43.6			20.3			18.0			15.1		
Approach LOS	D			C			B			B		

Intersection Summary	
Cycle Length: 130	Actuated Cycle Length: 130
Offset: 43 (33%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 20.4	Intersection LOS: C
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Wonderland Road & Beaverbrook Avenue



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Total 2026 AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	160	170	151	28	64	179	69	1029	36	266	1222	95
Future Volume (vph)	160	170	151	28	64	179	69	1029	36	266	1222	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.94
Fipb, ped/bikes	0.96	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1589	1807	1478	1664	1773	1436	1530	3433	1422	1650	3500	1286
Fit Permitted	0.72	1.00	1.00	0.53	1.00	1.00	0.19	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	1197	1807	1478	936	1773	1436	309	3433	1422	356	3500	1286
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)	160	170	151	28	64	179	69	1029	36	266	1222	95
RTOR Reduction (vph)	0	0	111	0	0	146	0	0	15	0	0	30
Lane Group Flow (vph)	160	170	40	28	64	33	69	1029	21	266	1222	65
Conf. Peds. (#/hr)	35	14	14		35	17	15	15		15	15	17
Heavy Vehicles (%)	2%	4%	5%	0%	6%	3%	10%	4%	0%	2%	2%	10%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8		2		6		6
Actuated Green, G (s)	24.3	24.3	24.3	24.3	24.3	24.3	81.4	75.8	75.8	92.7	83.1	83.1
Effective Green, g (s)	24.3	24.3	24.3	24.3	24.3	24.3	81.4	75.8	75.8	92.7	83.1	83.1
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19	0.19	0.63	0.58	0.58	0.71	0.64	0.64
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	223	337	276	174	331	268	246	2001	829	382	2237	822
v/s Ratio Prot		0.09			0.04		0.01	0.30		c0.07	0.35	
v/s Ratio Perm	c0.13		0.03	0.03		0.02	0.16		0.01	c0.43		0.05
v/c Ratio	0.72	0.50	0.14	0.16	0.19	0.12	0.28	0.51	0.03	0.70	0.55	0.08
Uniform Delay, d1	49.6	47.4	44.2	44.3	44.6	44.0	10.2	16.1	11.5	10.2	13.0	8.9
Progression 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
Incremental Delay, d2	10.5	1.2	0.2	0.4	0.3	0.2	0.6	0.9	0.1	5.4	1.0	0.2
Delay (s)	60.1	48.6	44.4	44.7	44.9	44.2	10.9	17.1	11.5	15.6	14.0	9.1
Level of Service	E	D	D	D	D	D	B	B	B	B	B	A
Approach Delay (s)	51.1			44.4			16.5			13.9		
Approach LOS	D			D			B			B		

Intersection Summary	
HCM 2000 Control Delay	22.3 HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.72
Actuated Cycle Length (s)	130.0 Sum of lost time (s) 17.0
Intersection Capacity Utilization	81.6% ICU Level of Service D
Analysis Period (min)	15
c Critical Lane Group	

HCM Unsignalized Intersection Capacity Analysis
2: Proudfoot Lane & Beaverbrook Avenue

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	2	99	8	6	7	237	6	0	40	11	4
Future Volume (vph)	6	2	99	8	6	7	237	6	0	40	11	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
Hourly flow rate (vph)	6	2	99	8	6	7	237	6	0	40	11	4
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	107	21	243	55								
Volume Left (vph)	6	8	237	40								
Volume Right (vph)	99	7	0	4								
Hadj (s)	-0.37	-0.09	0.30	0.14								
Departure Headway (s)	4.3	4.7	4.6	4.6								
Degree Utilization, x	0.13	0.03	0.31	0.07								
Capacity (veh/h)	779	710	768	740								
Control Delay (s)	7.9	7.8	9.6	8.0								
Approach Delay (s)	7.9	7.8	9.6	8.0								
Approach LOS	A	A	A	A								

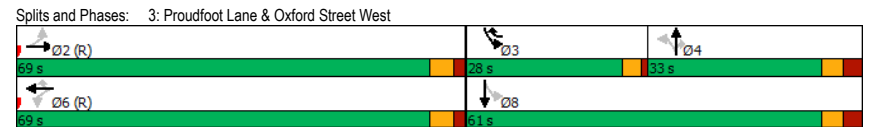
Intersection Summary			
Delay		8.8	
Level of Service		A	
Intersection Capacity Utilization	29.7%		ICU Level of Service A
Analysis Period (min)	15		

Timings
3: Proudfoot Lane & Oxford Street West

Future Total 2026 AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	1315	8	710	191	108	147	48	326	81
Future Volume (vph)	78	1315	8	710	191	108	147	48	326	81
Turn Type	Perm	NA	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		6	3		4		3	8
Permitted Phases	2		6		4		4		4	8
Detector Phase	2	2	6	6	3	4	4	4	3	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	69.0	69.0	69.0	69.0	28.0	33.0	33.0	33.0	28.0	61.0
Total Split (%)	53.1%	53.1%	53.1%	53.1%	21.5%	25.4%	25.4%	25.4%	21.5%	46.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
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)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4
Lead/Lag					Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	73.3	73.3	73.3	73.3	97.9	17.7	17.7	17.7	47.1	44.7
Actuated g/C Ratio	0.56	0.56	0.56	0.56	0.75	0.14	0.14	0.14	0.36	0.34
v/c Ratio	0.23	0.74	0.08	0.37	0.17	0.70	0.60	0.20	0.76	0.24
Control Delay	18.8	25.7	16.1	18.3	8.2	75.5	62.2	11.5	44.3	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	25.7	16.1	18.3	8.2	75.5	62.2	11.5	44.3	23.0
LOS	B	C	B	B	A	E	E	B	D	C
Approach Delay		25.4		16.2		58.9			38.2	
Approach LOS		C		B		E			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 43 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 27.8	Intersection LOS: C
Intersection Capacity Utilization 90.9%	ICU Level of Service E
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	1315	59	8	710	191	108	147	48	326	81	50
Future Volume (vph)	78	1315	59	8	710	191	108	147	48	326	81	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	3271		1517	3368	1419	1606	1792	1384	1641	1551	
Flt Permitted	0.33	1.00		0.11	1.00	1.00	0.67	1.00	1.00	0.43	1.00	
Satd. Flow (perm)	590	3271		175	3368	1419	1138	1792	1384	745	1551	
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)	78	1315	59	8	710	191	108	147	48	326	81	50
RTOR Reduction (vph)	0	2	0	0	0	45	0	0	41	0	19	0
Lane Group Flow (vph)	78	1372	0	8	710	146	108	147	7	326	112	0
Conf. Peds. (#/hr)	2		5	5		2	10		15	15		10
Heavy Vehicles (%)	0%	2%	6%	15%	6%	4%	6%	5%	2%	19%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	
Protected Phases		2			6	3		4		3	8	
Permitted Phases	2			6		6	4		4	8		
Actuated Green, G (s)	73.3	73.3		73.3	73.3	96.3	17.7	17.7	17.7	44.7	44.7	
Effective Green, g (s)	73.3	73.3		73.3	73.3	96.3	17.7	17.7	17.7	44.7	44.7	
Actuated g/C Ratio	0.56	0.56		0.56	0.56	0.74	0.14	0.14	0.14	0.34	0.34	
Clearance Time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
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)	332	1844		98	1899	1051	154	243	188	414	533	
v/s Ratio Prot		c0.42			0.21	0.02		0.08		c0.14	0.07	
v/s Ratio Perm	0.13			0.05		0.08	0.09		0.00	c0.13		
v/c Ratio	0.23	0.74		0.08	0.37	0.14	0.70	0.60	0.03	0.79	0.21	
Uniform Delay, d1	14.3	21.3		13.0	15.7	4.9	53.6	52.9	48.7	35.2	30.2	
Progression Factor	1.00	1.00		0.85	1.06	8.69	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	2.8		1.6	0.5	0.1	13.5	4.2	0.1	9.5	0.2	
Delay (s)	15.9	24.1		12.5	17.1	42.4	67.1	57.1	48.8	44.8	30.4	
Level of Service	B	C		B	B	D	E	E	D	D	C	
Approach Delay (s)		23.6			22.4			59.3			40.6	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

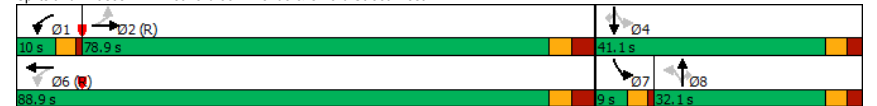
Timings
4: Beaverbrook Avenue & Oxford Street West

Future Total 2026 AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	4	1588	83	867	21	6	209	52	18
Future Volume (vph)	4	1588	83	867	21	6	209	52	18
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2	1	6		8		7	4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	1	6	8	8	8	7	4
Switch Phase									4
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	41.1	9.0	41.1	31.8	31.8	31.8	9.0	31.8
Total Split (s)	78.9	78.9	10.0	88.9	32.1	32.1	32.1	9.0	41.1
Total Split (%)	60.7%	60.7%	7.7%	68.4%	24.7%	24.7%	24.7%	6.9%	31.6%
Yellow Time (s)	3.5	3.5	3.0	3.5	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	3.6	3.6	1.0	3.6	2.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	7.1		5.8	5.8	4.0	5.8
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	87.4	87.4	100.5	97.4	12.5	12.5	21.5	19.7	
Actuated g/C Ratio	0.67	0.67	0.77	0.75	0.10	0.10	0.17	0.15	
v/c Ratio	0.01	0.71	0.48	0.35	0.21	0.78	0.26	0.06	
Control Delay	18.2	29.4	15.2	5.3	54.6	38.6	45.9	42.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.2	29.4	15.2	5.3	54.6	38.6	45.9	42.7	
LOS	B	C	B	A	D	D	D	D	
Approach Delay		29.3		6.1		40.4		45.1	
Approach LOS		C		A		D		D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
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: 0.78			
Intersection Signal Delay: 22.9		Intersection LOS: C	
Intersection Capacity Utilization 75.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	4	1588	26	83	867	15	21	6	209	52	18	0
Future Volume (vph)	4	1588	26	83	867	15	21	6	209	52	18	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.3	3.3	3.0	3.5	3.5	3.3	3.3	3.3	3.7	3.7	3.7
Total Lost time (s)	7.1	7.1		4.0	7.1		5.8	5.8	4.0	5.8		
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00		
Fpfb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.85	1.00	1.00		
Flt Protected	0.95	1.00		0.95	1.00		0.96	1.00	0.95	1.00		
Satd. Flow (prot)	1789	3382		1465	3334		1725	1446	1789	1883		
Flt Permitted	0.32	1.00		0.09	1.00		0.77	1.00	0.56	1.00		
Satd. Flow (perm)	607	3382		144	3334		1374	1446	1055	1883		
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)	4	1588	26	83	867	15	21	6	209	52	18	0
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	129	0	0	0
Lane Group Flow (vph)	4	1613	0	83	881	0	0	27	80	52	18	0
Confl. Peds. (#/hr)			7	7								
Heavy Vehicles (%)	2%	2%	6%	15%	6%	2%	0%	2%	8%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	5	0	0	0	0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm		
Protected Phases	2		1	6		8		8	7	4		
Permitted Phases	2		6		8		8	4		4		
Actuated Green, G (s)	86.6	86.6	96.6	96.6	12.5	12.5	20.5	20.5				
Effective Green, g (s)	86.6	86.6	96.6	96.6	12.5	12.5	20.5	20.5				
Actuated g/C Ratio	0.67	0.67	0.74	0.74	0.10	0.10	0.16	0.16				
Clearance Time (s)	7.1	7.1	4.0	7.1	5.8	5.8	4.0	5.8				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	404	2252	167	2477	132	139	188	296				
v/s Ratio Prot		c0.48	c0.02	0.26			c0.01	0.01				
v/s Ratio Perm	0.01		0.34		0.02	c0.06	0.03					
v/c Ratio	0.01	0.72	0.50	0.36	0.20	0.57	0.28	0.06				
Uniform Delay, d1	7.3	13.9	12.1	5.8	54.2	56.2	47.6	46.6				
Progression Factor	1.83	1.84	1.31	0.75	1.00	1.00	1.00	1.00				
Incremental Delay, d2	0.0	1.3	2.2	0.4	0.8	5.6	0.8	0.1				
Delay (s)	13.4	26.9	18.0	4.8	54.9	61.8	48.4	46.6				
Level of Service	B	C	B	A	D	E	D	D				
Approach Delay (s)		26.9		5.9		61.0		47.9				
Approach LOS		C		A		E		D				

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

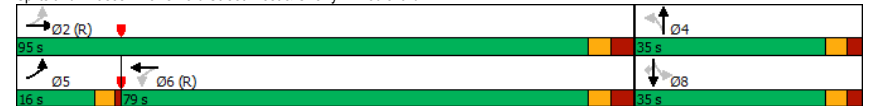
Timings
5: Oxford Street West & Cherryhill Boulevard

Future Total 2026 AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	149	1538	26	823	18	3	86	22	102
Future Volume (vph)	149	1538	26	823	18	3	86	22	102
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.5	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	16.0	95.0	79.0	79.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	12.3%	73.1%	60.8%	60.8%	26.9%	26.9%	26.9%	26.9%	26.9%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	102.9	99.8	87.3	87.3	17.3	17.3	17.3	17.3	17.3
Actuated g/C Ratio	0.79	0.77	0.67	0.67	0.13	0.13	0.13	0.13	0.13
v/c Ratio	0.32	0.63	0.15	0.40	0.11	0.07	0.54	0.09	0.39
Control Delay	8.4	14.2	13.8	11.5	46.6	23.5	63.4	45.9	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	14.2	13.8	11.5	46.6	23.5	63.4	45.9	12.4
LOS	A	B	B	B	D	C	E	D	B
Approach Delay		13.7		11.6		36.1		36.8	
Approach LOS		B		B		D		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 91 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 83.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	149	1538	81	26	823	53	18	3	12	86	22	102
Future Volume (vph)	149	1538	81	26	823	53	18	3	12	86	22	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.93		1.00	1.00	0.93
Fipb, ped/bikes	1.00	1.00		1.00	1.00		0.94	1.00		0.93	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1659	3357		1701	3222		1563	1538		1605	1837	1324
Flt Permitted	0.28	1.00		0.14	1.00		0.74	1.00		0.75	1.00	1.00
Satd. Flow (perm)	494	3357		251	3222		1223	1538		1185	1837	1324
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)	149	1538	81	26	823	53	18	3	12	86	22	102
RTOR Reduction (vph)	0	2	0	0	3	0	0	10	0	0	0	88
Lane Group Flow (vph)	149	1617	0	26	873	0	18	5	0	86	22	14
Confl. Peds. (#/hr)	17		11	11		17	42		51	51		42
Heavy Vehicles (%)	11%	2%	5%	0%	6%	8%	6%	0%	0%	6%	0%	13%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		6			4			8		8
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	99.8	99.8		87.3	87.3		17.3	17.3		17.3	17.3	17.3
Effective Green, g (s)	99.8	99.8		87.3	87.3		17.3	17.3		17.3	17.3	17.3
Actuated g/C Ratio	0.77	0.77		0.67	0.67		0.13	0.13		0.13	0.13	0.13
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	455	2577		168	2163		162	204		157	244	176
v/s Ratio Prot	0.02	c0.48		0.27			0.00			0.01		
v/s Ratio Perm	0.23			0.10			0.01			c0.07		0.01
v/c Ratio	0.33	0.63		0.15	0.40		0.11	0.02		0.55	0.09	0.08
Uniform Delay, d1	4.6	6.8		7.8	9.6		49.6	49.0		52.7	49.4	49.4
Progression Factor	1.74	1.67		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	0.9		2.0	0.6		0.3	0.0		3.9	0.2	0.2
Delay (s)	8.2	12.1		9.8	10.2		49.9	49.0		56.6	49.6	49.5
Level of Service	A	B		A	B		D	D		E	D	D
Approach Delay (s)		11.8			10.2			49.5			52.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	
Intersection Capacity Utilization	83.9%	ICU Level of Service	
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔	
Traffic Volume (veh/h)	102	4	80	39	11	18	62	286	12	10	305	78	
Future Volume (Veh/h)	102	4	80	39	11	18	62	286	12	10	305	78	
Sign Control	Stop			Stop			Free			Free			
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)	102	4	80	39	11	18	62	286	12	10	305	78	
Pedestrians	16			20			25			11			
Lane Width (m)	3.7			3.7			3.1			3.5			
Walking Speed (m/s)	1.1			1.1			1.1			1.1			
Percent Blockage	1			2			2			1			
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	824	822	385	868	855	323	399						318
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	824	822	385	868	855	323	399						318
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2						4.1
tC, 2 stage (s)													
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3						2.2
p0 queue free %	58	99	87	81	96	97	94						99
cM capacity (veh/h)	242	282	632	209	270	702	1111						1230
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2							
Volume Total	186	68	62	298	10	383							
Volume Left	102	39	62	0	10	0							
Volume Right	80	18	0	12	0	78							
cSH	330	269	1111	1700	1230	1700							
Volume to Capacity	0.56	0.25	0.06	0.18	0.01	0.23							
Queue Length 95th (m)	24.9	7.4	1.3	0.0	0.2	0.0							
Control Delay (s)	29.1	22.8	8.4	0.0	8.0	0.0							
Lane LOS	D	C	A		A								
Approach Delay (s)	29.1	22.8	1.5	0.2									
Approach LOS	D	C											
Intersection Summary													
Average Delay	7.5												
Intersection Capacity Utilization	47.7%						ICU Level of Service			A			
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
101: Beaverbrook Avenue & Westfield Drive

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Volume (veh/h)	7	31	30	0	5	2	20	5	0	0	40	0	
Future Volume (Veh/h)	7	31	30	0	5	2	20	5	0	0	40	0	
Sign Control	Stop			Stop			Free			Free			
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)	7	31	30	0	5	2	20	5	0	0	40	0	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (m)	319												
pX, platoon unblocked													
vC, conflicting volume	90	85	40	130	85	5	40						5
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	90	85	40	130	85	5	40						5
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.1
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.2
p0 queue free %	99	96	97	100	99	100	99						100
cM capacity (veh/h)	881	795	1031	786	795	1078	1570						1616
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total	68	7	25	40									
Volume Left	7	0	20	0									
Volume Right	30	2	0	0									
cSH	894	859	1570	1616									
Volume to Capacity	0.08	0.01	0.01	0.00									
Queue Length 95th (m)	1.9	0.2	0.3	0.0									
Control Delay (s)	9.4	9.2	5.9	0.0									
Lane LOS	A	A	A										
Approach Delay (s)	9.4	9.2	5.9	0.0									
Approach LOS	A	A											
Intersection Summary													
Average Delay	6.1												
Intersection Capacity Utilization	23.7%			ICU Level of Service			A						
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
102: Street B & Beaverbrook Avenue

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	40	2	0	14	7	0
Future Volume (Veh/h)	40	2	0	14	7	0
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	2	0	14	7	0
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			42			55 41
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			42			55 41
tC, single (s)			4.1			6.4 6.2
tC, 2 stage (s)						
tF (s)			2.2			3.5 3.3
p0 queue free %			100			99 100
cM capacity (veh/h)			1567			953 1030
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	42	14	7			
Volume Left	0	0	7			
Volume Right	2	0	0			
cSH	1700	1567	953			
Volume to Capacity	0.02	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	8.8			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	8.8			
Approach LOS	A					
Intersection Summary						
Average Delay	1.0					
Intersection Capacity Utilization	12.3%			ICU Level of Service		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
103: Street B & Street A

Future Total 2026 AM Peak Hour
05/28/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (veh/h)	8	0	5	19	0	1
Future Volume (Veh/h)	8	0	5	19	0	1
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)	8	0	5	19	0	1
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	16	14			24	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	14			24	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1003	1065			1591	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	8	24	1			
Volume Left	8	0	0			
Volume Right	0	19	0			
cSH	1003	1700	1591			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.1				
Intersection Capacity Utilization		12.3%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
104: Street B/Proposed Condo Road & Street A

Future Total 2026 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	19	0	11	8	6	0	0	31	18	0	0
Future Volume (Veh/h)	0	19	0	11	8	6	0	0	31	18	0	0
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)	0	19	0	11	8	6	0	0	31	18	0	0
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		14		19			52	55	19	83	52	11
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol		14		19			52	55	19	83	52	11
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 %		100		99			100	100	97	98	100	100
cM capacity (veh/h)		1604		1597			942	830	1059	873	834	1070
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	19	25	31	18								
Volume Left	0	11	0	18								
Volume Right	0	6	31	0								
cSH	1604	1597	1059	873								
Volume to Capacity	0.00	0.01	0.03	0.02								
Queue Length 95th (m)	0.0	0.2	0.7	0.5								
Control Delay (s)	0.0	3.2	8.5	9.2								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	3.2	8.5	9.2								
Approach LOS			A	A								
Intersection Summary												
Average Delay			5.5									
Intersection Capacity Utilization		20.9%		ICU Level of Service	A							
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
105: Street B & Proposed Condo Road

Future Total 2026 AM Peak Hour
05/28/2021



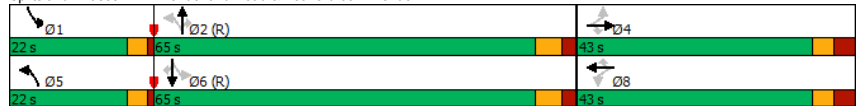
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Volume (veh/h)	0	2	5	0	1	1
Future Volume (Veh/h)	0	2	5	0	1	1
Sign Control	Stop			Free		
Grade	0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	5	0	1	1
Pedestrians						
Lane Width (m)						
Walking 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	8	5	5			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	8	5	5			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	1012	1078	1616			
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	5	2			
Volume Left	0	0	1			
Volume Right	2	0	0			
cSH	1078	1700	1616			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.3	0.0	3.6			
Lane LOS	A		A			
Approach Delay (s)	8.3	0.0	3.6			
Approach LOS	A					
Intersection Summary						
Average Delay	2.7					
Intersection Capacity Utilization	12.3%		ICU Level of Service		A	
Analysis Period (min)	15					

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Total 2026 PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	106	181	176	76	292	380	218	1280	58	217	1264	232
Future Volume (vph)	106	181	176	76	292	380	218	1280	58	217	1264	232
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			5	2		1	6
Permitted Phases		4		4	8	8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	39.7	39.7	39.7	39.7	39.7	39.7	9.0	32.3	32.3	9.0	32.3	32.3
Total Split (s)	43.0	43.0	43.0	43.0	43.0	43.0	22.0	65.0	65.0	22.0	65.0	65.0
Total Split (%)	33.1%	33.1%	33.1%	33.1%	33.1%	33.1%	16.9%	50.0%	50.0%	16.9%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	27.4	27.4	27.4	27.4	27.4	27.4	86.8	69.8	69.8	89.0	70.9	70.9
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.67	0.54	0.54	0.68	0.55	0.55
v/c Ratio	0.97	0.48	0.39	0.40	0.75	0.73	0.69	0.67	0.07	0.67	0.66	0.30
Control Delay	128.0	48.0	7.8	48.6	59.8	21.4	25.5	26.1	4.2	26.4	25.3	7.9
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	128.0	48.0	7.8	48.6	59.8	21.4	25.5	26.1	4.2	26.4	25.3	7.9
LOS	F	D	A	D	E	C	C	C	A	C	C	A
Approach Delay	51.0				39.1				25.2			
Approach LOS	D				D				C			

Intersection Summary	
Cycle Length: 130	Actuated Cycle Length: 130
Offset: 38 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 96.2%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Wonderland Road & Beaverbrook Avenue



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	106	181	176	76	292	380	218	1280	58	217	1264	232
Future Volume (vph)	106	181	176	76	292	380	218	1280	58	217	1264	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.95	1.00	1.00	0.92	1.00	0.92	1.00
Fipb, ped/bikes	0.98	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1635	1789	1500	1615	1842	1472	1668	3535	1389	1668	3500	1305
Fit Permitted	0.30	1.00	1.00	0.53	1.00	1.00	0.13	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	520	1789	1500	903	1842	1472	236	3535	1389	215	3500	1305
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)	106	181	176	76	292	380	218	1280	58	217	1264	232
RTOR Reduction (vph)	0	0	139	0	0	214	0	0	27	0	0	71
Lane Group Flow (vph)	106	181	37	76	292	166	218	1280	31	217	1264	161
Conf. Peds. (#/hr)	31	26	26	31	36	24	24	36	24	24	36	36
Heavy Vehicles (%)	1%	5%	2%	2%	2%	1%	1%	1%	0%	1%	2%	3%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8			5	2		1	6
Permitted Phases		4		4	8	8	2		2	6		6
Actuated Green, G (s)	27.4	27.4	27.4	27.4	27.4	27.4	84.5	69.8	69.8	86.7	70.9	70.9
Effective Green, g (s)	27.4	27.4	27.4	27.4	27.4	27.4	84.5	69.8	69.8	86.7	70.9	70.9
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21	0.21	0.65	0.54	0.54	0.67	0.55	0.55
Clearance Time (s)	6.7	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	109	377	316	190	388	310	315	1898	745	319	1908	711
v/s Ratio Prot		0.10			0.16		0.08	0.36		0.08	0.36	
v/s Ratio Perm	c0.20		0.02	0.08		0.11	c0.37		0.02	0.37		0.12
v/c Ratio	0.97	0.48	0.12	0.40	0.75	0.54	0.69	0.67	0.04	0.68	0.66	0.23
Uniform Delay, d1	50.9	45.0	41.5	44.2	48.1	45.6	15.7	21.9	14.3	17.0	21.0	15.3
Progression 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
Incremental Delay, d2	77.0	1.0	0.2	1.4	8.0	1.8	6.4	1.9	0.1	5.9	1.8	0.7
Delay (s)	127.9	46.0	41.7	45.6	56.1	47.4	22.1	23.8	14.4	22.9	22.9	16.1
Level of Service	F	D	D	D	E	D	C	B	C	B	C	B
Approach Delay (s)	63.1				50.6				23.2			
Approach LOS	E				D				C			

Intersection Summary	
HCM 2000 Control Delay	31.4
HCM 2000 Volume to Capacity ratio	0.76
Actuated Cycle Length (s)	130.0
Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.2%
ICU Level of Service	F
Analysis Period (min)	15
c Critical Lane Group	

HCM Unsignalized Intersection Capacity Analysis
2: Proudfoot Lane & Beaverbrook Avenue

Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	20	3	234	2	0	32	154	4	4	18	7	11
Future Volume (vph)	20	3	234	2	0	32	154	4	4	18	7	11
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)	20	3	234	2	0	32	154	4	4	18	7	11
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	257	34	162	36								
Volume Left (vph)	20	2	154	18								
Volume Right (vph)	234	32	4	11								
Hadj (s)	-0.45	-0.52	0.29	-0.05								
Departure Headway (s)	4.0	4.2	4.9	4.7								
Degree Utilization, x	0.28	0.04	0.22	0.05								
Capacity (veh/h)	865	801	701	707								
Control Delay (s)	8.6	7.3	9.2	7.9								
Approach Delay (s)	8.6	7.3	9.2	7.9								
Approach LOS	A	A	A	A								

Intersection Summary				
Delay		8.6		
Level of Service		A		
Intersection Capacity Utilization		43.8%	ICU Level of Service	A
Analysis Period (min)		15		

Timings
3: Proudfoot Lane & Oxford Street West

Future Total 2026 PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	64	828	14	1345	505	177	298	35	313	170
Future Volume (vph)	64	828	14	1345	505	177	298	35	313	170
Turn Type	Perm	NA	Perm	NA	custom	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		6	3		4		3	8
Permitted Phases	2		6		2	4		4	8	
Detector Phase	2	2	6	6	3	4	4	4	3	8
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	5.0	7.0
Minimum Split (s)	23.6	23.6	23.6	23.6	9.5	31.4	31.4	31.4	9.5	31.4
Total Split (s)	73.4	73.4	73.4	73.4	25.1	31.5	31.5	31.5	25.1	56.6
Total Split (%)	56.5%	56.5%	56.5%	56.5%	19.3%	24.2%	24.2%	24.2%	19.3%	43.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9	1.0	3.1	3.1	3.1	1.0	3.1
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)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4
Lead/Lag					Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	69.2	69.2	69.2	69.2	91.5	24.1	24.1	24.1	51.2	48.8
Actuated g/C Ratio	0.53	0.53	0.53	0.53	0.70	0.19	0.19	0.19	0.39	0.38
v/c Ratio	0.68	0.56	0.07	0.72	0.51	0.93	0.86	0.12	0.91	0.38
Control Delay	62.6	21.7	24.8	31.3	8.5	100.2	75.4	5.6	61.9	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	21.7	24.8	31.3	8.5	100.2	75.4	5.6	61.9	28.7
LOS	E	C	C	C	A	F	E	A	E	C
Approach Delay		24.2		25.0			79.2			47.4
Approach LOS		C		C			E			D

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 79 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 35.0	Intersection LOS: C
Intersection Capacity Utilization 97.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Proudfoot Lane & Oxford Street West



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	64	828	134	14	1345	505	177	298	35	313	170	73
Future Volume (vph)	64	828	134	14	1345	505	177	298	35	313	170	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	5.6	5.6	5.6	5.6	4.0	6.4	6.4	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.99	1.00	1.00	0.92	1.00	1.00	0.94	1.00	0.99		
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00		
Frt	1.00	0.98	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1620	3193	1616	3500	1379	1618	1863	1366	1663	1679		
Flt Permitted	0.10	1.00	0.22	1.00	1.00	0.61	1.00	1.00	0.20	1.00		
Satd. Flow (perm)	177	3193	373	3500	1379	1035	1863	1366	342	1679		
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	
Adj. Flow (vph)	64	828	134	14	1345	505	177	298	35	313	170	73
RTOR Reduction (vph)	0	10	0	0	0	28	0	0	29	0	12	0
Lane Group Flow (vph)	64	952	0	14	1345	477	177	298	6	313	231	0
Confl. Peds. (#/hr)	21		19	19		21	22		32	32		22
Heavy Vehicles (%)	4%	2%	2%	8%	2%	1%	4%	2%	4%	1%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	0
Turn Type	Perm	NA	Perm	NA	custom	Perm	NA	Perm	pm+pt	NA		
Protected Phases	2			6		3		4		3		8
Permitted Phases	2			6		2	4		4	8		
Actuated Green, G (s)	69.2	69.2		69.2	69.2	89.9	24.1	24.1	24.1	48.8	48.8	
Effective Green, g (s)	69.2	69.2		69.2	69.2	89.9	24.1	24.1	24.1	48.8	48.8	
Actuated g/C Ratio	0.53	0.53		0.53	0.53	0.69	0.19	0.19	0.19	0.38	0.38	
Clearance Time (s)	5.6	5.6		5.6	5.6	4.0	6.4	6.4	6.4	4.0	6.4	
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)	94	1699		198	1863	953	191	345	253	338	630	
v/s Ratio Prot		0.30			c0.38	0.08		0.16		c0.15	0.14	
v/s Ratio Perm	0.36			0.04		0.27	0.17		0.00	c0.20		
v/c Ratio	0.68	0.56		0.07	0.72	0.50	0.93	0.86	0.03	0.93	0.37	
Uniform Delay, d1	22.3	20.3		14.8	23.1	9.5	52.1	51.4	43.3	33.2	29.4	
Progression Factor	1.00	1.00		1.51	1.24	1.16	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	33.2	1.3		0.5	1.8	0.3	44.3	19.5	0.0	30.4	0.4	
Delay (s)	55.5	21.6		22.8	30.4	11.3	96.4	70.8	43.4	63.6	29.8	
Level of Service	E	C		C	C	B	F	E	D	E	C	
Approach Delay (s)		23.7			25.2			77.8			48.8	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

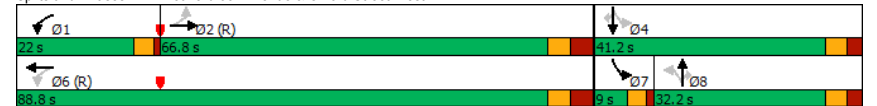
Timings
4: Beaverbrook Avenue & Oxford Street West

Future Total 2026 PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	7	1182	183	1785	32	21	176	36	8
Future Volume (vph)	7	1182	183	1785	32	21	176	36	8
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	2		1	6		8		7	4
Permitted Phases	2		6		8		8	4	
Detector Phase	2	2	1	6	8	8	8	7	4
Switch Phase									4
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	41.1	9.0	41.1	31.8	31.8	31.8	9.0	31.8
Total Split (s)	66.8	66.8	22.0	88.8	32.2	32.2	32.2	9.0	41.2
Total Split (%)	51.4%	51.4%	16.9%	68.3%	24.8%	24.8%	24.8%	6.9%	31.7%
Yellow Time (s)	3.5	3.5	3.0	3.5	3.3	3.3	3.3	3.0	3.3
All-Red Time (s)	3.6	3.6	1.0	3.6	2.5	2.5	2.5	1.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	7.1		5.8	5.8	4.0	5.8
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	84.5	84.5	103.2	100.1	11.6	11.6	18.8	17.0	
Actuated g/C Ratio	0.65	0.65	0.79	0.77	0.09	0.09	0.14	0.13	
v/c Ratio	0.06	0.55	0.54	0.69	0.41	0.60	0.20	0.03	
Control Delay	13.3	15.3	10.3	10.5	63.7	16.6	46.8	43.2	
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	
Total Delay	13.3	15.3	10.3	10.7	63.7	16.6	46.8	43.2	
LOS	B	B	B	B	E	B	D	D	
Approach Delay		15.3		10.6		27.5		46.2	
Approach LOS		B		B		C		D	


Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 13.8		Intersection LOS: B	
Intersection Capacity Utilization 81.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Total 2026 PM Peak Hour
05/28/2021




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗↘	↘	↔	↗↘	↘	↔	↗↘	↘	↔	↗↘	↘
Traffic Volume (vph)	7	1182	25	183	1785	46	32	21	176	36	8	0
Future Volume (vph)	7	1182	25	183	1785	46	32	21	176	36	8	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.3	3.3	3.0	3.5	3.5	3.3	3.3	3.3	3.7	3.7	3.7
Total Lost time (s)	7.1	7.1		4.0	7.1		5.8	5.8	4.0	5.8		
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00		
Fpfb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00		
Frt	1.00	1.00		1.00	1.00		1.00	0.85	1.00	1.00		
Flt Protected	0.95	1.00		0.95	1.00		0.97	1.00	0.95	1.00		
Satd. Flow (prot)	1789	3350		1559	3459		1733	1473	1789	1883		
Flt Permitted	0.10	1.00		0.17	1.00		0.81	1.00	0.54	1.00		
Satd. Flow (perm)	195	3350		283	3459		1448	1473	1012	1883		
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)	7	1182	25	183	1785	46	32	21	176	36	8	0
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	160	0	0	0
Lane Group Flow (vph)	7	1206	0	183	1830	0	0	53	16	36	8	0
Conf. Peds. (#/hr)			12	12								
Heavy Vehicles (%)	2%	3%	0%	8%	2%	2%	0%	2%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	5	0	0	0	0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm		
Protected Phases		2		1	6		8		7	4		
Permitted Phases	2		6			8		8	4		4	
Actuated Green, G (s)	82.9	82.9		98.5	98.5		11.6	11.6	18.6	18.6		
Effective Green, g (s)	82.9	82.9		98.5	98.5		11.6	11.6	18.6	18.6		
Actuated g/C Ratio	0.64	0.64		0.76	0.76		0.09	0.09	0.14	0.14		
Clearance Time (s)	7.1	7.1		4.0	7.1		5.8	5.8	4.0	5.8		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	124	2136		328	2620		129	131	162	269		
v/s Ratio Prot		0.36		0.05	c0.53				c0.01	0.00		
v/s Ratio Perm	0.04			0.37			c0.04	0.01	0.03			
v/c Ratio	0.06	0.56		0.56	0.70		0.41	0.12	0.22	0.03		
Uniform Delay, d1	8.9	13.3		8.1	8.1		56.0	54.5	48.8	47.9		
Progression Factor	0.87	0.97		1.00	1.00		1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.7	0.9		2.1	1.6		2.1	0.4	0.7	0.0		
Delay (s)	8.4	13.8		10.1	9.7		58.1	54.9	49.5	48.0		
Level of Service	A	B		B	A		E	D	D	D		
Approach Delay (s)		13.7			9.7			55.6		49.2		
Approach LOS		B			A			E		D		

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Timings
5: Oxford Street West & Cherryhill Boulevard

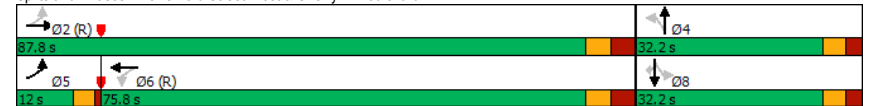
Future Total 2026 PM Peak Hour
05/28/2021



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↗↘	↔	↗↘	↔	↗↘	↔	↗↘	↘
Traffic Volume (vph)	152	1218	8	1738	45	7	192	1	258
Future Volume (vph)	152	1218	8	1738	45	7	192	1	258
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2		6		4		8	
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	6	6	4	4	8	8	8
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	41.1	41.1	41.1	31.8	31.8	31.8	31.8	31.8
Total Split (s)	12.0	87.8	75.8	75.8	32.2	32.2	32.2	32.2	32.2
Total Split (%)	10.0%	73.2%	63.2%	63.2%	26.8%	26.8%	26.8%	26.8%	26.8%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.0	3.6	3.6	3.6	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	5.8	5.8	5.8	5.8	5.8
Lead/Lag	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes		Yes	Yes					
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	87.9	84.8	71.5	71.5	22.3	22.3	22.3	22.3	22.3
Actuated g/C Ratio	0.73	0.71	0.60	0.60	0.19	0.19	0.19	0.19	0.19
v/c Ratio	0.80	0.52	0.03	0.89	0.19	0.10	0.83	0.00	0.71
Control Delay	55.2	9.7	11.9	28.2	41.2	17.7	74.1	37.0	33.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	9.7	11.9	28.2	41.2	17.7	74.1	37.0	33.2
LOS	E	A	B	C	D	B	E	D	C
Approach Delay		14.7		28.2		31.2		50.6	
Approach LOS		B		C		C		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 94 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 25.9	Intersection LOS: C
Intersection Capacity Utilization 92.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	152	1218	19	8	1738	45	45	7	26	192	1	258
Future Volume (vph)	152	1218	19	8	1738	45	45	7	26	192	1	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.96		1.00	1.00	0.94
Fipb, ped/bikes	1.00	1.00		0.99	1.00		0.95	1.00		0.96	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1677	3346		1693	3376		1626	1592		1613	1837	1400
Flt Permitted	0.05	1.00		0.23	1.00		0.76	1.00		0.74	1.00	1.00
Satd. Flow (perm)	93	3346		403	3376		1296	1592		1249	1837	1400
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)	152	1218	19	8	1738	45	45	7	26	192	1	258
RTOR Reduction (vph)	0	1	0	0	2	0	0	21	0	0	0	104
Lane Group Flow (vph)	152	1236	0	8	1781	0	45	12	0	192	1	154
Conf. Peds. (#/hr)	19		21	21		19	37		28	28		37
Heavy Vehicles (%)	10%	3%	11%	0%	2%	3%	3%	0%	0%	3%	0%	6%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	5
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		6		6		4		8		8
Permitted Phases	2			6		4		8		8		8
Actuated Green, G (s)	84.8	84.8		71.6	71.6		22.3	22.3		22.3	22.3	22.3
Effective Green, g (s)	84.8	84.8		71.6	71.6		22.3	22.3		22.3	22.3	22.3
Actuated g/C Ratio	0.71	0.71		0.60	0.60		0.19	0.19		0.19	0.19	0.19
Clearance Time (s)	4.0	7.1		7.1	7.1		5.8	5.8		5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	187	2364		240	2014		240	295		232	341	260
v/s Ratio Prot	c0.06	0.37		c0.53		c0.01		0.01		c0.15		0.00
v/s Ratio Perm	0.51			0.02		0.03				c0.15		0.11
v/c Ratio	0.81	0.52		0.03	0.88		0.19	0.04		0.83	0.00	0.59
Uniform Delay, d1	34.2	8.2		10.0	20.7		41.2	40.1		47.0	39.8	44.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	22.9	0.8		0.3	6.1		0.4	0.1		20.9	0.0	3.6
Delay (s)	57.1	9.0		10.2	26.8		41.6	40.1		67.9	39.8	48.3
Level of Service	E	A		B	C		D	D		E	D	D
Approach Delay (s)		14.3			26.7			41.0			56.6	
Approach LOS		B			C			D			E	
Intersection Summary												
HCM 2000 Control Delay	26.0			HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio	0.87											
Actuated Cycle Length (s)	120.0			Sum of lost time (s)				16.9				
Intersection Capacity Utilization	92.4%			ICU Level of Service				F				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔	
Traffic Volume (veh/h)	101	0	79	0	0	0	89	276	0	0	430	103	
Future Volume (Veh/h)	101	0	79	0	0	0	89	276	0	0	430	103	
Sign Control	Stop			Stop			Free			Free			
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)	101	0	79	0	0	0	89	276	0	0	430	103	
Pedestrians	35			23			20			37			
Lane Width (m)	3.7			3.1			3.5			3.5			
Walking Speed (m/s)	1.1			1.1			1.1			1.1			
Percent Blockage	3			2			2			2			
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (m)													
pX, platoon unblocked													
vC, conflicting volume	990	970	540	986	1022	296	568						276
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	990	970	540	986	1022	296	568						276
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2						4.1
tC, 2 stage (s)													
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3						2.2
p0 queue free %	47	100	84	100	100	100	91						100
cM capacity (veh/h)	190	222	504	170	207	730	939						1287
Direction, Lane #													
Volume Total	180	0	89	276	0	533							
Volume Left	101	0	89	0	0	0							
Volume Right	79	0	0	0	0	103							
cSH	262	1700	939	1700	1700	1700							
Volume to Capacity	0.69	0.00	0.09	0.16	0.00	0.31							
Queue Length 95th (m)	34.7	0.0	2.4	0.0	0.0	0.0							
Control Delay (s)	44.4	0.0	9.2	0.0	0.0	0.0							
Lane LOS	E	A	A										
Approach Delay (s)	44.4	0.0	2.3										
Approach LOS	E	A											
Intersection Summary													
Average Delay	8.2												
Intersection Capacity Utilization	56.8%			ICU Level of Service			B						
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
101: Beaverbrook Avenue & Westfield Drive

Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Volume (veh/h)	0	10	30	0	15	10	52	22	0	10	14	0	
Future Volume (Veh/h)	0	10	30	0	15	10	52	22	0	10	14	0	
Sign Control	Stop			Stop			Free			Free			
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)	0	10	30	0	15	10	52	22	0	10	14	0	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (m)	319												
pX, platoon unblocked													
vC, conflicting volume	178	160	14	195	160	22	14						22
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	178	160	14	195	160	22	14						22
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.1
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.2
p0 queue free %	100	99	97	100	98	99	97						99
cM capacity (veh/h)	742	704	1066	713	704	1055	1604						1593
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total	40	25	74	24									
Volume Left	0	0	52	10									
Volume Right	30	10	0	0									
cSH	945	812	1604	1593									
Volume to Capacity	0.04	0.03	0.03	0.01									
Queue Length 95th (m)	1.0	0.7	0.8	0.1									
Control Delay (s)	9.0	9.6	5.2	3.1									
Lane LOS	A	A	A	A									
Approach Delay (s)	9.0	9.6	5.2	3.1									
Approach LOS	A	A											
Intersection Summary													
Average Delay	6.5												
Intersection Capacity Utilization	16.7%			ICU Level of Service	A								
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
102: Street B & Beaverbrook Avenue

Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	18	7	0	32	2	6
Future Volume (Veh/h)	18	7	0	32	2	6
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	7	0	32	2	6
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			25	54		22
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			25	54		22
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	100		99
cM capacity (veh/h)			1589	955		1056
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	25	32	8			
Volume Left	0	0	2			
Volume Right	7	0	6			
cSH	1700	1589	1029			
Volume to Capacity	0.01	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	8.5			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	8.5			
Approach LOS	A					
Intersection Summary						
Average Delay	1.0					
Intersection Capacity Utilization	13.3%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
103: Street A & Street B

Future Total 2026 PM Peak Hour
05/28/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	29	0	5	10	0	2
Future Volume (Veh/h)	29	0	5	10	0	2
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)	29	0	5	10	0	2
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	12	10			15	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12	10			15	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	1008	1071			1603	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	29	15	2			
Volume Left	29	0	0			
Volume Right	0	10	0			
cSH	1008	1700	1603			
Volume to Capacity	0.03	0.01	0.00			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		5.5				
Intersection Capacity Utilization		13.3%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
104: Street B/Proposed Condo Road & Street A

Future Total 2026 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	10	0	24	29	14	0	0	20	10	0	0
Future Volume (Veh/h)	0	10	0	24	29	14	0	0	20	10	0	0
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)	0	10	0	24	29	14	0	0	20	10	0	0
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	43			10			94	101	10	114	94	36
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	43			10			94	101	10	114	94	36
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 %	100			99			100	100	98	99	100	100
cM capacity (veh/h)	1566			1610			879	777	1071	837	784	1037
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	10	67	20	10								
Volume Left	0	24	0	10								
Volume Right	0	14	20	0								
cSH	1566	1610	1071	837								
Volume to Capacity	0.00	0.01	0.02	0.01								
Queue Length 95th (m)	0.0	0.3	0.4	0.3								
Control Delay (s)	0.0	2.7	8.4	9.4								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	2.7	8.4	9.4								
Approach LOS			A	A								
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			24.3%		ICU Level of Service	A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 Street B & Proposed Condo Road
 105:

Future Total 2026 PM Peak Hour
 05/28/2021

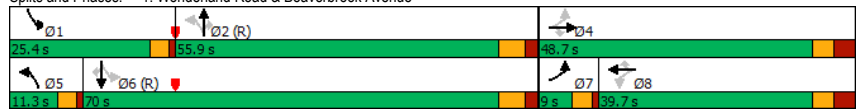
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	3	5	0	5	2
Future Volume (Veh/h)	0	3	5	0	5	2
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	5	0	5	2
Pedestrians						
Lane Width (m)						
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	17	5			5	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	17	5			5	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	998	1078			1616	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	3	5	7			
Volume Left	0	0	5			
Volume Right	3	0	0			
cSH	1078	1700	1616			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	8.3	0.0	5.2			
Lane LOS	A		A			
Approach Delay (s)	8.3	0.0	5.2			
Approach LOS	A					
Intersection Summary						
Average Delay			4.1			
Intersection Capacity Utilization			14.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Total 2035 AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	177	211	168	32	102	199	78	1138	41	295	1352	106
Future Volume (vph)	177	211	168	32	102	199	78	1138	41	295	1352	106
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	9.0	39.7	39.7	39.7	39.7	39.7	9.5	32.3	32.3	9.5	32.3	32.3
Total Split (s)	9.0	48.7	48.7	39.7	39.7	39.7	11.3	55.9	55.9	25.4	70.0	70.0
Total Split (%)	6.9%	37.5%	37.5%	30.5%	30.5%	30.5%	8.7%	43.0%	43.0%	19.5%	53.8%	53.8%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	1.0	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	31.6	28.9	28.9	19.9	19.9	19.9	69.1	59.8	59.8	90.4	77.1	77.1
Actuated g/C Ratio	0.24	0.22	0.22	0.15	0.15	0.15	0.53	0.46	0.46	0.70	0.59	0.59
v/c Ratio	0.76	0.57	0.42	0.21	0.41	0.54	0.47	0.78	0.06	0.82	0.71	0.14
Control Delay	61.1	49.0	14.2	46.2	51.3	10.1	20.5	35.7	0.2	47.7	23.4	4.9
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	61.1	49.0	14.2	46.2	51.3	10.1	20.5	35.7	0.2	47.7	23.4	4.9
LOS	E	D	B	D	D	B	C	D	A	D	C	A
Approach Delay		42.3			26.2			33.6			26.3	
Approach LOS		D			C			C			C	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 31.0
 Intersection LOS: C
 Intersection Capacity Utilization 89.7%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: Wonderland Road & Beaverbrook Avenue



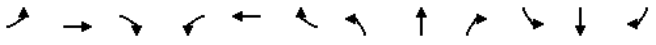
HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Total 2035 AM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	177	211	168	32	102	199	78	1138	41	295	1352	106
Future Volume (vph)	177	211	168	32	102	199	78	1138	41	295	1352	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.94
Fipb, ped/bikes	0.98	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1623	1807	1478	1664	1773	1436	1531	3433	1422	1652	3500	1286
Fit Permitted	0.56	1.00	1.00	0.62	1.00	1.00	0.13	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	949	1807	1478	1079	1773	1436	210	3433	1422	162	3500	1286
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	229	183	35	111	216	85	1237	45	321	1470	115
RTOR Reduction (vph)	0	0	104	0	0	183	0	0	24	0	0	40
Lane Group Flow (vph)	192	229	79	35	111	33	85	1237	21	321	1470	75
Conf. Peds. (#/hr)	35		14	14		35	17		15	15		17
Heavy Vehicles (%)	2%	4%	5%	0%	6%	3%	10%	4%	0%	2%	2%	10%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	28.9	28.9	28.9	19.9	19.9	19.9	66.8	59.8	59.8	88.1	77.1	77.1
Effective Green, g (s)	28.9	28.9	28.9	19.9	19.9	19.9	66.8	59.8	59.8	88.1	77.1	77.1
Actuated g/C Ratio	0.22	0.22	0.22	0.15	0.15	0.15	0.51	0.46	0.46	0.68	0.59	0.59
Clearance Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	401	328	165	271	219	179	1579	654	388	2075	762
v/s Ratio Prot	c0.03	0.13			0.06		0.03	0.36		c0.15	0.42	
v/s Ratio Perm	c0.15		0.05	0.03		0.02	0.22		0.01	c0.41		0.06
v/c Ratio	0.81	0.57	0.24	0.21	0.41	0.15	0.47	0.78	0.03	0.83	0.71	0.10
Uniform Delay, d1	48.3	45.0	41.5	48.2	49.7	47.7	17.7	29.6	19.2	34.3	18.6	11.4
Progression 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
Incremental Delay, d2	18.9	2.0	0.4	0.6	1.0	0.3	2.0	4.0	0.1	13.5	2.1	0.3
Delay (s)	67.2	47.0	41.9	48.8	50.8	48.0	19.7	33.6	19.3	47.8	20.6	11.7
Level of Service	E	D	D	D	D	D	B	C	B	D	C	B
Approach Delay (s)		51.9			49.0			32.3			24.7	
Approach LOS		D			D			C			C	

Intersection Summary
 HCM 2000 Control Delay 33.1
 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.87
 Actuated Cycle Length (s) 130.0
 Sum of lost time (s) 21.0
 Intersection Capacity Utilization 89.7%
 ICU Level of Service E
 Analysis Period (min) 15
 c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Proudfoot Lane & Beaverbrook Avenue


Future Total 2035 AM Peak Hour
05/28/2021



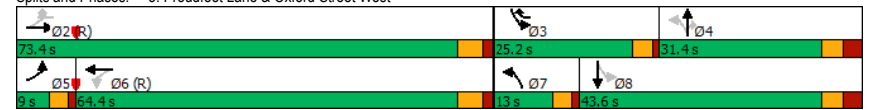
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	25	110	22	31	3	263	7	18	10	28	10
Future Volume (vph)	7	25	110	22	31	3	263	7	18	10	28	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	27	120	24	34	3	286	8	20	11	30	11
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	155	61	314	52								
Volume Left (vph)	8	24	286	11								
Volume Right (vph)	120	3	20	11								
Hadj (s)	-0.30	0.08	0.24	-0.05								
Departure Headway (s)	4.6	5.1	4.7	4.8								
Degree Utilization, x	0.20	0.09	0.41	0.07								
Capacity (veh/h)	721	642	732	697								
Control Delay (s)	8.7	8.6	11.0	8.1								
Approach Delay (s)	8.7	8.6	11.0	8.1								
Approach LOS	A	A	B	A								
Intersection Summary												
Delay	9.9											
Level of Service	A											
Intersection Capacity Utilization	40.1%			ICU Level of Service			A					
Analysis Period (min)	15											

Timings
3: Proudfoot Lane & Oxford Street West

Future Total 2035 AM Peak Hour
05/28/2021



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	102	1463	20	814	211	120	167	54	376	94
Future Volume (vph)	102	1463	20	814	211	120	167	54	376	94
Turn Type	pm+pt	NA	Perm	NA	custom	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	5	2		6	3	7	4	3	8	
Permitted Phases	2		6	2	4	4	4	8		
Detector Phase	5	2	6	6	3	7	4	4	3	8
Switch Phase										
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	7.0	7.0	5.0	7.0
Minimum Split (s)	9.0	23.6	23.6	23.6	9.5	9.0	31.4	31.4	9.5	31.4
Total Split (s)	9.0	73.4	64.4	64.4	25.2	13.0	31.4	31.4	25.2	43.6
Total Split (%)	6.9%	56.5%	49.5%	49.5%	19.4%	10.0%	24.2%	24.2%	19.4%	33.5%
Yellow Time (s)	3.0	3.7	3.7	3.7	3.0	3.0	3.3	3.3	3.0	3.3
All-Red Time (s)	1.0	1.9	1.9	1.9	1.0	1.0	3.1	3.1	1.0	3.1
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)	4.0	5.6	5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4
Lead/Lag	Lead		Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	75.9	74.3	62.7	62.7	97.1	29.8	18.5	18.5	46.1	30.8
Actuated g/C Ratio	0.58	0.57	0.48	0.48	0.75	0.23	0.14	0.14	0.35	0.24
v/c Ratio	0.37	0.89	0.45	0.54	0.21	0.45	0.71	0.20	1.06	0.45
Control Delay	17.1	32.2	62.9	28.4	0.9	35.6	68.2	1.4	99.1	38.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	32.2	62.9	28.4	0.9	35.6	68.2	1.4	99.1	38.3
LOS	B	C	E	C	A	D	E	A	F	D
Approach Delay	31.2		23.5			46.2		80.9		
Approach LOS	C		C			D		F		
Intersection Summary										
Cycle Length: 130										
Actuated Cycle Length: 130										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 120										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 1.06										
Intersection Signal Delay: 37.9					Intersection LOS: D					
Intersection Capacity Utilization 98.6%					ICU Level of Service F					
Analysis Period (min) 15										
Splits and Phases: 3: Proudfoot Lane & Oxford Street West										



HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Future Total 2035 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	102	1463	66	20	814	211	120	167	54	376	94	67
Future Volume (vph)	102	1463	66	20	814	211	120	167	54	376	94	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	4.0	5.6		5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.97	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	3271		1517	3368	1418	1615	1792	1384	1644	1550	
Flt Permitted	0.22	1.00		0.06	1.00	1.00	0.65	1.00	1.00	0.35	1.00	
Satd. Flow (perm)	383	3271		102	3368	1418	1099	1792	1384	611	1550	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	1590	72	22	885	229	130	182	59	409	102	73
RTOR Reduction (vph)	0	2	0	0	0	46	0	0	51	0	21	0
Lane Group Flow (vph)	111	1660	0	22	885	183	130	182	8	409	154	0
Conf. Peds. (#/hr)	2		5	5		2	10		15	15		10
Heavy Vehicles (%)	0%	2%	6%	15%	6%	4%	6%	5%	2%	19%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	0
Turn Type	pm+pt	NA	Perm	NA	custom	pm+pt	NA	Perm	pm+pt	NA	NA	
Protected Phases	5	2		6	3	7	4		3	8		
Permitted Phases	2			6		2	4		4	8		
Actuated Green, G (s)	74.3	74.3		62.7	62.7	95.5	27.4	18.5	18.5	43.7	30.8	
Effective Green, g (s)	74.3	74.3		62.7	62.7	95.5	27.4	18.5	18.5	43.7	30.8	
Actuated g/C Ratio	0.57	0.57		0.48	0.48	0.73	0.21	0.14	0.14	0.34	0.24	
Clearance Time (s)	4.0	5.6		5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4	
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)	295	1869		49	1624	1041	266	255	196	373	367	
v/s Ratio Prot	0.02	c0.51			0.26	0.03	0.03	0.10		c0.18	0.10	
v/s Ratio Perm	0.19			0.22		0.10	0.07		0.01	c0.19		
v/c Ratio	0.38	0.89		0.45	0.54	0.18	0.49	0.71	0.04	1.10	0.42	
Uniform Delay, d1	15.1	24.2		22.2	23.6	5.3	44.0	53.2	48.1	39.5	42.0	
Progression Factor	1.00	1.00		1.22	1.11	0.42	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	6.7		24.7	1.2	0.1	1.4	9.1	0.1	75.1	0.8	
Delay (s)	15.9	31.0		51.9	27.4	2.3	45.4	62.3	48.2	114.6	42.8	
Level of Service	B	C		D	C	A	D	E	D	F	D	
Approach Delay (s)		30.0			22.8			54.2			93.1	
Approach LOS		C			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

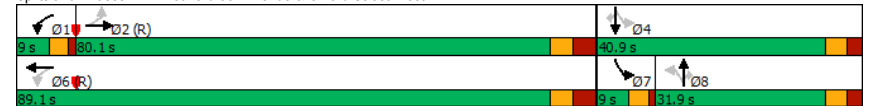
Timings
4: Beaverbrook Avenue & Oxford Street West

Future Total 2035 AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	15	1769	92	959	23	21	230	200	76	41
Future Volume (vph)	15	1769	92	959	23	21	230	200	76	41
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases		2	1	6		8		7	4	
Permitted Phases	2		6		8		8	4		4
Detector Phase	2	2	1	6	8	8	8	7	4	4
Switch Phase								4		
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	41.1	9.0	41.1	31.8	31.8	31.8	9.0	31.8	31.8
Total Split (s)	80.1	80.1	9.0	89.1	31.9	31.9	31.9	9.0	40.9	40.9
Total Split (%)	61.6%	61.6%	6.9%	68.5%	24.5%	24.5%	24.5%	6.9%	31.5%	31.5%
Yellow Time (s)	3.5	3.5	3.0	3.5	3.3	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	3.6	3.6	1.0	3.6	2.5	2.5	2.5	1.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	4.0	7.1		5.8	5.8	4.0	5.8	5.8
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
Act Effect Green (s)	80.1	80.1	92.2	89.1	19.0	19.0	29.8	41.0	28.0	28.0
Actuated g/C Ratio	0.62	0.62	0.71	0.69	0.15	0.15	0.23	0.22	0.22	0.22
v/c Ratio	0.06	0.94	0.95	0.49	0.22	0.84	0.76	0.20	0.11	0.11
Control Delay	11.9	20.4	112.5	7.0	48.6	54.3	62.3	41.0	4.0	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	20.4	112.5	7.0	48.6	54.3	62.3	41.0	4.0	4.0
LOS	B	C	F	A	D	D	E	D	A	A
Approach Delay		20.3		15.7		53.4			49.6	
Approach LOS		C		B		D			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 24.1	Intersection LOS: C
Intersection Capacity Utilization 89.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Total 2035 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	15	1769	29	92	959	58	23	21	230	200	76	41
Future Volume (vph)	15	1769	29	92	959	58	23	21	230	200	76	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.3	3.3	3.0	3.5	3.5	3.3	3.3	3.3	3.7	3.7	3.7
Total Lost time (s)	7.1	7.1		4.0	7.1			5.8	5.8	4.0	5.8	5.8
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00	1.00	1.00	1.00
Fpfb, ped/bikes	1.00	1.00		1.00	0.99			1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1789	3382		1465	3319			1738	1446	1789	1883	1601
Flt Permitted	0.25	1.00		0.05	1.00			0.82	1.00	0.60	1.00	1.00
Satd. Flow (perm)	465	3382		73	3319			1465	1446	1129	1883	1601
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	1923	32	100	1042	63	25	23	250	217	83	45
RTOR Reduction (vph)	0	1	0	0	3	0	0	0	87	0	0	35
Lane Group Flow (vph)	16	1954	0	100	1102	0	0	48	163	217	83	10
Conf. Peds. (#/hr)			7	7								
Heavy Vehicles (%)	2%	2%	6%	15%	6%	2%	0%	2%	8%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	5	0	0	0	0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm		
Protected Phases	2		1	6		8		8	7	4		
Permitted Phases	2		6			8		8	4		4	
Actuated Green, G (s)	80.1	80.1	89.1	89.1	19.0	19.0	28.0	28.0	28.0	28.0		
Effective Green, g (s)	80.1	80.1	89.1	89.1	19.0	19.0	28.0	28.0	28.0	28.0		
Actuated g/C Ratio	0.62	0.62	0.69	0.69	0.15	0.15	0.22	0.22	0.22	0.22		
Clearance Time (s)	7.1	7.1	4.0	7.1	5.8	5.8	4.0	5.8	5.8	5.8		
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)	286	2083	103	2274	214	211	268	405	344			
v/s Ratio Prot		0.58	c0.04	0.33			c0.03	0.04				
v/s Ratio Perm	0.03		c0.62		0.03	0.11	c0.14		0.01			
v/c Ratio	0.06	0.94	0.97	0.48	0.22	0.77	0.81	0.20	0.03			
Uniform Delay, d1	9.9	22.7	36.9	9.6	49.0	53.4	48.9	41.9	40.3			
Progression Factor	0.94	0.60	2.14	0.60	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.2	4.6	74.4	0.7	0.5	16.0	16.3	0.3	0.0			
Delay (s)	9.5	18.3	153.6	6.5	49.5	69.4	65.2	42.1	40.3			
Level of Service	A	B	F	A	D	E	E	D	D			
Approach Delay (s)		18.3		18.7		66.2		56.4				
Approach LOS		B		B		E		E				

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Timings
5: Oxford Street West & Cherryhill Boulevard

Future Total 2035 AM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↕	↔	↕	↔	↕	↔
Traffic Volume (vph)	166	1854	26	950	18	3	137	22	102
Future Volume (vph)	166	1854	26	950	18	3	137	22	102
Turn Type	pm+pt	NA	Perm	NA	Split	NA	Split	NA	pm+ov
Protected Phases	5	2		6	7	7	4	4	5
Permitted Phases	2		6		7	7	4	4	5
Detector Phase	5	2	6	6	7	7	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	7.0	7.0	5.0
Minimum Split (s)	9.0	41.1	41.1	41.1	9.0	9.0	22.5	22.5	9.0
Total Split (s)	14.0	98.0	84.0	84.0	9.0	9.0	23.0	23.0	14.0
Total Split (%)	10.8%	75.4%	64.6%	64.6%	6.9%	6.9%	17.7%	17.7%	10.8%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.0	3.0	3.5	3.5	3.0
All-Red Time (s)	1.0	3.6	3.6	3.6	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	4.0	4.0	4.5	4.5	4.0
Lead/Lag	Lead		Lag	Lag			Lead	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	102.3	99.2	86.6	86.6	5.9	5.9	13.2	13.2	22.3
Actuated g/C Ratio	0.79	0.76	0.67	0.67	0.05	0.05	0.10	0.10	0.17
v/c Ratio	0.49	0.82	0.41	0.51	0.27	0.24	0.55	0.53	0.35
Control Delay	7.1	8.6	37.0	13.5	69.0	39.6	67.5	66.0	8.7
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	8.7	37.0	13.5	69.0	39.6	67.5	66.0	8.7
LOS	A	A	D	B	E	D	E	E	A
Approach Delay		8.6		14.1		55.9		44.1	
Approach LOS		A		B		E		D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 86.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Future Total 2035 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	[Diagrammatic Lane Configurations]											
Traffic Volume (vph)	166	1854	81	26	950	59	18	3	12	137	22	102
Future Volume (vph)	166	1854	81	26	950	59	18	3	12	137	22	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		4.0	4.0		4.5	4.5	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.71		1.00	1.00	0.94
Fpfb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1661	3363		1704	3224		1665	1173		1546	1614	1342
Flt Permitted	0.21	1.00		0.06	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	362	3363		104	3224		1665	1173		1546	1614	1342
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	180	2015	88	28	1033	64	20	3	13	149	24	111
RTOR Reduction (vph)	0	2	0	0	3	0	0	13	0	0	0	92
Lane Group Flow (vph)	180	2101	0	28	1094	0	20	3	0	86	87	19
Conf. Peds. (#/hr)	17		11	11		17	42		51	51		42
Heavy Vehicles (%)	11%	2%	5%	0%	6%	8%	6%	0%	0%	6%	0%	13%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	0
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	pm+ov
Protected Phases	5	2		6			7	7		4	4	5
Permitted Phases	2			6								4
Actuated Green, G (s)	97.6	97.6		85.0	85.0		3.6	3.6		13.2	13.2	21.8
Effective Green, g (s)	97.6	97.6		85.0	85.0		3.6	3.6		13.2	13.2	21.8
Actuated g/C Ratio	0.75	0.75		0.65	0.65		0.03	0.03		0.10	0.10	0.17
Clearance Time (s)	4.0	7.1		7.1	7.1		4.0	4.0		4.5	4.5	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	357	2524		68	2108		46	32		156	163	225
v/s Ratio Prot	0.03	c0.62		0.34			c0.01	0.00		c0.06	0.05	0.01
v/s Ratio Perm	0.34			0.27								0.01
v/c Ratio	0.50	0.83		0.41	0.52		0.43	0.10		0.55	0.53	0.08
Uniform Delay, d1	6.6	10.8		10.7	11.8		62.2	61.6		55.6	55.5	45.7
Progression Factor	1.16	0.58		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	1.5		17.4	0.9		6.5	1.4		4.2	3.3	0.2
Delay (s)	8.2	7.8		28.0	12.7		68.7	63.1		59.7	58.8	45.8
Level of Service	A	A		C	B		E	E		E	E	D
Approach Delay (s)		7.8			13.1			66.2				54.0
Approach LOS		A			B			E				D
Intersection Summary												
HCM 2000 Control Delay		13.5			HCM 2000 Level of Service							B
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		130.0			Sum of lost time (s)							19.6
Intersection Capacity Utilization		86.8%			ICU Level of Service							E
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

Future Total 2035 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	[Diagrammatic Lane Configurations]											
Traffic Volume (veh/h)	129	4	123	39	11	18	76	313	12	10	333	96
Future Volume (Veh/h)	129	4	123	39	11	18	76	313	12	10	333	96
Sign Control	Stop		Stop		Free		Free		Free		Free	
Grade	0%		0%		0%		0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	140	4	134	42	12	20	83	340	13	11	362	104
Pedestrians	16		20		25		11		11		11	
Lane Width (m)	3.7		3.7		3.1		3.5		3.5		3.5	
Walking Speed (m/s)	1.1		1.1		1.1		1.1		1.1		1.1	
Percent Blockage	1		2		2		1		1		1	
Right turn flare (veh)												
Median type	None						None					
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	995	991	455	1078	1036	378	482				373	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	995	991	455	1078	1036	378	482				373	
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	21	98	77	68	94	97	92				99	
cM capacity (veh/h)	178	218	577	129	205	655	1034				1174	
Direction, Lane #												
Volume Total	278	74	83	353	11	466						
Volume Left	140	42	83	0	11	0						
Volume Right	134	20	0	13	0	104						
cSH	268	179	1034	1700	1174	1700						
Volume to Capacity	1.04	0.41	0.08	0.21	0.01	0.27						
Queue Length 95th (m)	82.7	14.1	2.0	0.0	0.2	0.0						
Control Delay (s)	107.1	38.6	8.8	0.0	8.1	0.0						
Lane LOS	F	E	A		A							
Approach Delay (s)	107.1	38.6	1.7		0.2							
Approach LOS	F	E										
Intersection Summary												
Average Delay		26.4										
Intersection Capacity Utilization		55.7%			ICU Level of Service							B
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
101: Beaverbrook Avenue & Street A/Westfield Drive

Future Total 2035 AM Peak Hour
05/28/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔			↔			↔			↔		
Traffic Volume (veh/h)	0	15	32	30	2	0	9	3	26	30	35	0	
Future Volume (Veh/h)	0	15	32	30	2	0	9	3	26	30	35	0	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	16	35	33	2	0	10	3	28	33	38	0	
Pedestrians													
Lane Width (m)													
Walking Speed (m/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None						None						
Median storage (veh)													
Upstream signal (m)	319												
pX, platoon unblocked													
vC, conflicting volume	142	155	38	184	141	17	38						31
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	142	155	38	184	141	17	38						31
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.1
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.2
p0 queue free %	100	98	97	95	100	100	99						98
cM capacity (veh/h)	809	717	1034	723	730	1062	1572						1582
Direction, Lane #	EB 1	WB 1	NB 1	SB 1									
Volume Total	51	35	41	71									
Volume Left	0	33	10	33									
Volume Right	35	0	28	0									
cSH	908	723	1572	1582									
Volume to Capacity	0.06	0.05	0.01	0.02									
Queue Length 95th (m)	1.4	1.2	0.1	0.5									
Control Delay (s)	9.2	10.2	1.8	3.5									
Lane LOS	A	B	A	A									
Approach Delay (s)	9.2	10.2	1.8	3.5									
Approach LOS	A	B											
Intersection Summary													
Average Delay	5.8												
Intersection Capacity Utilization	20.6%			ICU Level of Service			A						
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis
102: Street B & Beaverbrook Avenue

Future Total 2035 AM Peak Hour
05/28/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↔			↔	↔	↔	
Traffic Volume (veh/h)	58	13	0	3	7	7	
Future Volume (Veh/h)	58	13	0	3	7	7	
Sign Control	Free		Free		Stop		
Grade	0%		0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	63	14	0	3	8	8	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None			None			
Median storage (veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume				77	73	70	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol				77	73	70	
tC, single (s)				4.1	6.4	6.2	
tC, 2 stage (s)							
tF (s)				2.2	3.5	3.3	
p0 queue free %				100	99	99	
cM capacity (veh/h)				1522	931	993	
Direction, Lane #	EB 1	WB 1	NB 1				
Volume Total	77	3	16				
Volume Left	0	0	8				
Volume Right	14	0	8				
cSH	1700	1522	961				
Volume to Capacity	0.05	0.00	0.02				
Queue Length 95th (m)	0.0	0.0	0.4				
Control Delay (s)	0.0	0.0	8.8				
Lane LOS	A						
Approach Delay (s)	0.0	0.0	8.8				
Approach LOS	A						
Intersection Summary							
Average Delay				1.5			
Intersection Capacity Utilization				13.1%		ICU Level of Service	A
Analysis Period (min)				15			

HCM Unsignalized Intersection Capacity Analysis
103: Street B & Street A

Future Total 2035 AM Peak Hour
05/28/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (veh/h)	3	0	7	14	0	9
Future Volume (Veh/h)	3	0	7	14	0	9
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	0	8	15	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	26	16			23	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	26	16			23	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	990	1064			1592	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	3	23	10			
Volume Left	3	0	0			
Volume Right	0	15	0			
cSH	990	1700	1592			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		12.3%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
104: Street B/Proposed Condo Road & Street A

Future Total 2035 AM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	10	0	6	3	2	0	0	27	10	0	0
Future Volume (Veh/h)	0	10	0	6	3	2	0	0	27	10	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	0	7	3	2	0	0	29	11	0	0
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	5			11			29	30	11	58	29	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5			11			29	30	11	58	29	4
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 %	100			100			100	100	97	99	100	100
cM capacity (veh/h)	1616			1608			977	859	1070	910	860	1080
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	11	12	29	11								
Volume Left	0	7	0	11								
Volume Right	0	2	29	0								
cSH	1616	1608	1070	910								
Volume to Capacity	0.00	0.00	0.03	0.01								
Queue Length 95th (m)	0.0	0.1	0.6	0.3								
Control Delay (s)	0.0	4.2	8.5	9.0								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	4.2	8.5	9.0								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.3									
Intersection Capacity Utilization			19.1%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
105: Street B & Proposed Condo Road

Future Total 2035 AM Peak Hour
05/28/2021

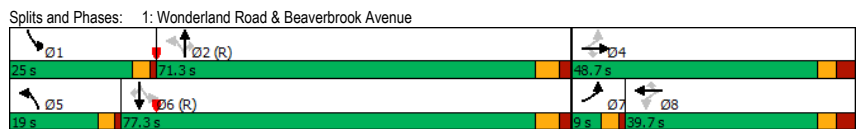


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Volume (veh/h)	0	14	7	0	4	9
Future Volume (Veh/h)	0	14	7	0	4	9
Sign Control	Stop			Free		
Grade	0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	15	8	0	4	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	26	8				8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	26	8				8
tC, single (s)	6.4	6.2				4.1
tC, 2 stage (s)						
tF (s)	3.5	3.3				2.2
p0 queue free %	100	99				100
cM capacity (veh/h)	987	1074				1612
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	15	8	14			
Volume Left	0	0	4			
Volume Right	15	0	0			
cSH	1074	1700	1612			
Volume to Capacity	0.01	0.00	0.00			
Queue Length 95th (m)	0.3	0.0	0.1			
Control Delay (s)	8.4	0.0	2.1			
Lane LOS	A		A			
Approach Delay (s)	8.4	0.0	2.1			
Approach LOS	A					
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization			13.5%	ICU Level of Service		A
Analysis Period (min)	15					

Timings
1: Wonderland Road & Beaverbrook Avenue
Future Total 2035 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	118	267	196	85	355	421	242	1415	65	296	1720	317
Future Volume (vph)	118	267	196	85	355	421	242	1415	65	296	1720	317
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0
Minimum Split (s)	9.0	39.7	39.7	39.7	39.7	39.7	9.0	32.3	32.3	9.0	32.3	32.3
Total Split (s)	9.0	48.7	48.7	39.7	39.7	39.7	19.0	71.3	71.3	25.0	77.3	77.3
Total Split (%)	6.2%	33.6%	33.6%	27.4%	27.4%	27.4%	13.1%	49.2%	49.2%	17.2%	53.3%	53.3%
Yellow Time (s)	3.0	3.3	3.3	3.3	3.3	3.3	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	1.0	3.4	3.4	3.4	3.4	3.4	1.0	2.2	2.2	1.0	2.2	2.2
Lost Time Adjust (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
Total Lost Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	42.7	40.0	40.0	31.0	31.0	31.0	84.5	65.2	65.2	94.3	71.0	71.0
Actuated g/C Ratio	0.29	0.28	0.28	0.21	0.21	0.21	0.58	0.45	0.45	0.65	0.49	0.49
v/c Ratio	0.94	0.54	0.35	0.43	0.90	0.85	0.99	0.89	0.10	0.95	1.00	0.45
Control Delay	109.5	48.9	6.8	56.2	81.5	41.0	97.9	45.0	0.3	83.1	59.4	14.0
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	109.5	48.9	6.8	56.2	81.5	41.0	97.9	45.0	0.3	83.1	59.4	14.0
LOS	F	D	A	E	F	D	F	D	A	F	E	B
Approach Delay		47.0			59.2			50.7			56.3	
Approach LOS		D			E			D			E	

Intersection Summary
 Cycle Length: 145
 Actuated Cycle Length: 145
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 54.0
 Intersection LOS: D
 Intersection Capacity Utilization 109.4%
 ICU Level of Service H
 Analysis Period (min) 15



HCM Signalized Intersection Capacity Analysis
1: Wonderland Road & Beaverbrook Avenue
Future Total 2035 PM Peak Hour
05/28/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	118	267	196	85	355	421	242	1415	65	296	1720	317
Future Volume (vph)	118	267	196	85	355	421	242	1415	65	296	1720	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.5	3.0	3.5	3.3	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.88
Fipb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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
Fit 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)	1665	1789	1494	1614	1842	1465	1668	3535	1378	1668	3500	1290
Fit Permitted	0.15	1.00	1.00	0.55	1.00	1.00	0.06	1.00	1.00	0.06	1.00	1.00
Satd. Flow (perm)	266	1789	1494	926	1842	1465	108	3535	1378	101	3500	1290
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)	118	267	196	85	355	421	242	1415	65	296	1720	317
RTOR Reduction (vph)	0	0	142	0	0	182	0	0	36	0	0	78
Lane Group Flow (vph)	118	267	54	85	355	239	242	1415	29	296	1720	239
Conf. Peds. (#/hr)	31		26	26		31	36		24	24		36
Heavy Vehicles (%)	1%	5%	2%	2%	2%	1%	1%	1%	0%	1%	2%	3%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	40.0	40.0	40.0	31.0	31.0	31.0	82.2	65.2	65.2	92.0	71.0	71.0
Effective Green, g (s)	40.0	40.0	40.0	31.0	31.0	31.0	82.2	65.2	65.2	92.0	71.0	71.0
Actuated g/C Ratio	0.28	0.28	0.28	0.21	0.21	0.21	0.57	0.45	0.45	0.63	0.49	0.49
Clearance Time (s)	4.0	6.7	6.7	6.7	6.7	6.7	4.0	6.3	6.3	4.0	6.3	6.3
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	121	493	412	197	393	313	244	1589	619	310	1713	631
v/s Ratio Prot	c0.03	0.15			0.19		0.12	0.40		c0.15	c0.49	
v/s Ratio Perm	c0.23		0.04	0.09		0.16	0.45		0.02	0.45		0.19
v/c Ratio	0.98	0.54	0.13	0.43	0.90	0.76	0.99	0.89	0.05	0.95	1.00	0.38
Uniform Delay, d1	51.6	44.7	39.4	49.4	55.5	53.6	49.3	36.6	22.4	48.8	37.0	23.2
Progression 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
Incremental Delay, d2	73.5	1.2	0.1	1.5	23.4	10.6	55.1	7.9	0.1	38.8	22.7	1.7
Delay (s)	125.1	45.9	39.6	50.9	78.9	64.2	104.4	44.6	22.6	87.6	59.7	24.9
Level of Service	F	D	D	D	E	E	F	D	C	F	E	C
Approach Delay (s)		59.9			68.9			52.1			58.5	
Approach LOS		E			E			D			E	

Intersection Summary
 HCM 2000 Control Delay 58.3
 HCM 2000 Level of Service E
 HCM 2000 Volume to Capacity ratio 1.03
 Actuated Cycle Length (s) 145.0
 Sum of lost time (s) 21.0
 Intersection Capacity Utilization 109.4%
 ICU Level of Service H
 Analysis Period (min) 15
 c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Proudfoot Lane & Beaverbrook Avenue

Future Total 2035 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	27	66	260	6	29	2	171	20	51	10	6	15
Future Volume (vph)	27	66	260	6	29	2	171	20	51	10	6	15
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)	27	66	260	6	29	2	171	20	51	10	6	15
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	353	37	242	31								
Volume Left (vph)	27	6	171	10								
Volume Right (vph)	260	2	51	15								
Hadj (s)	-0.36	0.03	0.11	-0.19								
Departure Headway (s)	4.3	5.1	5.0	5.0								
Degree Utilization, x	0.42	0.05	0.33	0.04								
Capacity (veh/h)	792	648	685	650								
Control Delay (s)	10.4	8.3	10.4	8.2								
Approach Delay (s)	10.4	8.3	10.4	8.2								
Approach LOS	B	A	B	A								
Intersection Summary												
Delay	10.2											
Level of Service	B											
Intersection Capacity Utilization	50.9%			ICU Level of Service			A					
Analysis Period (min)	15											

Timings
3: Proudfoot Lane & Oxford Street West

Future Total 2035 PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	78	937	25	1501	599	197	345	40	346	187	
Future Volume (vph)	78	937	25	1501	599	197	345	40	346	187	
Turn Type	pm+pt	NA	Perm	NA	custom	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		6	3	7	4		3	8	
Permitted Phases	2		6		2	4		4	8		
Detector Phase	5	2	6	6	3	7	4	4	3	8	
Switch Phase											
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	7.0	7.0	5.0	7.0	
Minimum Split (s)	9.0	23.6	23.6	23.6	9.0	9.0	31.4	31.4	9.0	31.4	
Total Split (s)	9.0	71.6	62.6	62.6	27.0	18.0	31.4	31.4	27.0	40.4	
Total Split (%)	6.9%	55.1%	48.2%	48.2%	20.8%	13.8%	24.2%	24.2%	20.8%	31.1%	
Yellow Time (s)	3.0	3.7	3.7	3.7	3.0	3.0	3.3	3.3	3.0	3.3	
All-Red Time (s)	1.0	1.9	1.9	1.9	1.0	1.0	3.1	3.1	1.0	3.1	
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)	4.0	5.6	5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4	
Lead/Lag	Lead		Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None	None	
Act Effct Green (s)	67.6	66.0	57.0	57.0	90.6	40.6	25.0	25.0	54.4	34.8	
Actuated g/C Ratio	0.52	0.51	0.44	0.44	0.70	0.31	0.19	0.19	0.42	0.27	
v/c Ratio	0.67	0.67	0.18	0.98	0.61	0.53	0.96	0.11	0.98	0.59	
Control Delay	45.6	25.8	25.8	47.0	4.0	31.9	91.3	0.6	80.4	45.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	45.6	25.8	25.8	47.0	4.0	31.9	91.3	0.6	80.4	45.1	
LOS	D	C	C	D	A	C	F	A	F	D	
Approach Delay	27.2		34.6			65.0			64.9		
Approach LOS	C		C			E			E		
Intersection Summary											
Cycle Length: 130											
Actuated Cycle Length: 130											
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green											
Natural Cycle: 120											
Control Type: Actuated-Coordinated											
Maximum v/c Ratio: 0.98											
Intersection Signal Delay: 40.8					Intersection LOS: D						
Intersection Capacity Utilization 101.6%					ICU Level of Service G						
Analysis Period (min) 15											
Splits and Phases: 3: Proudfoot Lane & Oxford Street West											

HCM Signalized Intersection Capacity Analysis
3: Proudfoot Lane & Oxford Street West

Future Total 2035 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	937	150	25	1501	599	197	345	40	346	187	85
Future Volume (vph)	78	937	150	25	1501	599	197	345	40	346	187	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.3	3.5	3.0	3.2	3.6	3.2	3.0	3.4	3.3
Total Lost time (s)	4.0	5.6		5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frbp, ped/bikes	1.00	0.99		1.00	1.00	0.93	1.00	1.00	0.94	1.00	0.99	
Fipb, ped/bikes	1.00	1.00		0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1620	3194		1601	3500	1383	1637	1863	1366	1665	1676	
Flt Permitted	0.07	1.00		0.19	1.00	1.00	0.57	1.00	1.00	0.14	1.00	
Satd. Flow (perm)	112	3194		325	3500	1383	990	1863	1366	242	1676	
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)	78	937	150	25	1501	599	197	345	40	346	187	85
RTOR Reduction (vph)	0	10	0	0	0	20	0	0	32	0	12	0
Lane Group Flow (vph)	78	1077	0	25	1501	579	197	345	8	346	260	0
Conf. Peds. (#/hr)	21		19	19		21	22		32	32		22
Heavy Vehicles (%)	4%	2%	2%	8%	2%	1%	4%	2%	4%	1%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	5	0	0	0
Turn Type	pm+pt	NA		Perm	NA	custom	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	5	2		6	3	7	4		3	8		
Permitted Phases	2			6		2	4		4	8		
Actuated Green, G (s)	66.0	66.0		57.0	57.0	89.0	38.2	25.0	25.0	52.0	34.8	
Effective Green, g (s)	66.0	66.0		57.0	57.0	89.0	38.2	25.0	25.0	52.0	34.8	
Actuated g/C Ratio	0.51	0.51		0.44	0.44	0.68	0.29	0.19	0.19	0.40	0.27	
Clearance Time (s)	4.0	5.6		5.6	5.6	4.0	4.0	6.4	6.4	4.0	6.4	
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)	114	1621		142	1534	946	356	358	262	348	448	
v/s Ratio Prot	0.03	c0.34			c0.43	0.11	0.06	0.19		c0.18	0.15	
v/s Ratio Perm	0.32			0.08		0.31	0.11		0.01	c0.22		
v/c Ratio	0.68	0.66		0.18	0.98	0.61	0.55	0.96	0.03	0.99	0.58	
Uniform Delay, d1	29.2	23.8		22.2	35.9	11.1	36.8	52.0	42.6	39.0	41.3	
Progression Factor	1.00	1.00		1.03	0.95	0.31	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.7	2.2		1.5	12.5	0.6	1.9	37.7	0.0	46.4	1.8	
Delay (s)	44.8	25.9		24.3	46.7	4.1	38.7	89.8	42.7	85.4	43.1	
Level of Service	D	C		C	D	A	D	F	D	F	D	
Approach Delay (s)		27.2			34.4			69.3			66.8	
Approach LOS		C			C			E			E	

Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

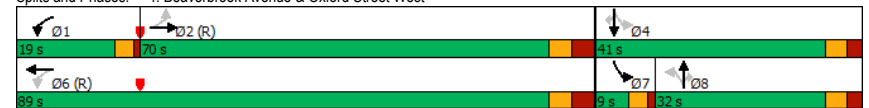
Timings
4: Beaverbrook Avenue & Oxford Street West

Future Total 2035 PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	31	1306	200	2012	35	82	195	125	33	24
Future Volume (vph)	31	1306	200	2012	35	82	195	125	33	24
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	2	1	6		8		7	4		
Permitted Phases	2	6		8		8	4	4		
Detector Phase	2	2	1	6	8	8	8	7	4	4
Switch Phase								4		
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	41.1	41.1	9.0	41.1	31.8	31.8	31.8	9.0	31.8	31.8
Total Split (s)	70.0	70.0	19.0	89.0	32.0	32.0	32.0	9.0	41.0	41.0
Total Split (%)	53.8%	53.8%	14.6%	68.5%	24.6%	24.6%	24.6%	6.9%	31.5%	31.5%
Yellow Time (s)	3.5	3.5	3.0	3.5	3.3	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	3.6	3.6	1.0	3.6	2.5	2.5	2.5	1.0	2.5	2.5
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)	7.1	7.1	4.0	7.1		5.8	5.8	4.0	5.8	5.8
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes		
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
Act Effect Green (s)	76.0	76.0	96.2	93.1	15.0	15.0	25.8	24.0	24.0	24.0
Actuated g/C Ratio	0.58	0.58	0.74	0.72	0.12	0.12	0.20	0.18	0.18	0.18
v/c Ratio	0.53	0.68	0.69	0.86	0.65	0.57	0.61	0.10	0.07	0.07
Control Delay	42.5	14.8	25.0	16.1	70.6	13.5	57.7	42.5	0.4	0.4
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.5	14.8	25.0	16.3	70.6	13.5	57.7	42.5	0.4	0.4
LOS	D	B	C	B	E	B	E	D	A	A
Approach Delay		15.5		17.1		34.9			47.4	
Approach LOS		B		B		C			D	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 125	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 93.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 4: Beaverbrook Avenue & Oxford Street West



HCM Signalized Intersection Capacity Analysis
4: Beaverbrook Avenue & Oxford Street West

Future Total 2035 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	31	1306	28	200	2012	120	35	82	195	125	33	24
Future Volume (vph)	31	1306	28	200	2012	120	35	82	195	125	33	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.7	3.3	3.3	3.0	3.5	3.5	3.3	3.3	3.3	3.7	3.7	3.7
Total Lost time (s)	7.1	7.1	4.0	7.1	5.8	5.8	4.0	5.8	5.8	4.0	5.8	5.8
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fpfb, ped/bikes	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	1.00	1.00	1.00	0.99	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.99	1.00	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1789	3349	1560	3443	1749	1473	1789	1883	1601			
Flt Permitted	0.05	1.00	0.12	1.00	0.89	1.00	0.46	1.00	1.00			
Satd. Flow (perm)	99	3349	204	3443	1575	1473	865	1883	1601			
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)	31	1306	28	200	2012	120	35	82	195	125	33	24
RTOR Reduction (vph)	0	1	0	0	3	0	0	173	0	0	0	20
Lane Group Flow (vph)	31	1333	0	200	2129	0	0	117	23	125	33	4
Confl. Peds. (#/hr)			12	12								
Heavy Vehicles (%)	2%	3%	0%	8%	2%	2%	0%	2%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	5	0	0	0	0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA	Perm		
Protected Phases	2		1	6		8		7	4			
Permitted Phases	2		6		8		8	4		4		
Actuated Green, G (s)	76.0	76.0	93.1	93.1	15.0	15.0	24.0	24.0	24.0			
Effective Green, g (s)	76.0	76.0	93.1	93.1	15.0	15.0	24.0	24.0	24.0			
Actuated g/C Ratio	0.58	0.58	0.72	0.72	0.12	0.12	0.18	0.18	0.18			
Clearance Time (s)	7.1	7.1	4.0	7.1	5.8	5.8	4.0	5.8	5.8			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	57	1957	282	2465	181	169	195	347	295			
v/s Ratio Prot		0.40	0.07	c0.62			c0.02	0.02				
v/s Ratio Perm	0.31		0.43		0.07	0.02	c0.09		0.00			
v/c Ratio	0.54	0.68	0.71	0.86	0.65	0.13	0.64	0.10	0.02			
Uniform Delay, d1	16.4	18.6	15.4	13.7	55.0	51.7	48.9	44.0	43.3			
Progression Factor	0.66	0.67	1.76	0.98	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	23.4	1.3	2.3	1.3	7.7	0.4	7.0	0.1	0.0			
Delay (s)	34.2	13.9	29.3	14.7	62.7	52.0	55.9	44.1	43.4			
Level of Service	C	B	C	B	E	D	E	D	D			
Approach Delay (s)		14.3		16.0		56.0		52.1				
Approach LOS		B		B		E		D				

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

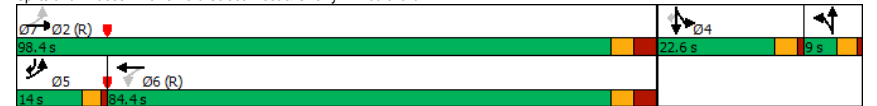
Timings
5: Oxford Street West & Cherryhill Boulevard

Future Total 2035 PM Peak Hour
05/28/2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	169	1430	8	2025	45	7	245	1	286
Future Volume (vph)	169	1430	8	2025	45	7	245	1	286
Turn Type	pm+pt	NA	Perm	NA	Split	NA	Split	NA	pm+ov
Protected Phases	5	2		6	7	7	4	4	5
Permitted Phases	2		6		7	7	4	4	5
Detector Phase	5	2	6	6	7	7	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.0	41.1	41.1	41.1	9.0	9.0	22.5	22.5	9.0
Total Split (s)	14.0	98.4	84.4	84.4	9.0	9.0	22.6	22.6	14.0
Total Split (%)	10.8%	75.7%	64.9%	64.9%	6.9%	6.9%	17.4%	17.4%	10.8%
Yellow Time (s)	3.0	3.5	3.5	3.5	3.0	3.0	3.5	3.5	3.0
All-Red Time (s)	1.0	3.6	3.6	3.6	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.1	7.1	7.1	4.0	4.0	4.5	4.5	4.0
Lead/Lag	Lead		Lag	Lag					Lead
Lead-Lag Optimize?	Yes		Yes	Yes					Yes
Recall Mode	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effect Green (s)	98.4	95.3	81.0	81.0	6.5	6.5	14.6	14.6	25.5
Actuated g/C Ratio	0.76	0.73	0.62	0.62	0.05	0.05	0.11	0.11	0.20
v/c Ratio	0.88	0.59	0.04	1.00	0.53	0.36	0.69	0.69	0.86
Control Delay	80.6	4.4	11.9	44.8	82.4	37.8	74.2	74.0	56.3
Queue Delay	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0
Total Delay	80.6	4.4	11.9	50.5	82.4	37.8	74.2	74.0	56.3
LOS	F	A	B	D	F	D	E	E	E
Approach Delay		12.3		50.3		63.5		64.6	
Approach LOS		B		D		E		E	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 38.1	Intersection LOS: D
Intersection Capacity Utilization 95.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: Oxford Street West & Cherryhill Boulevard



HCM Signalized Intersection Capacity Analysis
5: Oxford Street West & Cherryhill Boulevard

Future Total 2035 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	169	1430	19	8	2025	71	45	7	26	245	1	286
Future Volume (vph)	169	1430	19	8	2025	71	45	7	26	245	1	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.8	3.3	3.3	3.1	3.3	3.5	3.4	3.5	3.5	3.2	3.3	3.6
Total Lost time (s)	4.0	7.1		7.1	7.1		4.0	4.0		4.5	4.5	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.83		1.00	1.00	0.95
Fipb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.88		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	1677	3348		1696	3369		1713	1378		1591	1614	1414
Flt Permitted	0.05	1.00		0.17	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	84	3348		307	3369		1713	1378		1591	1614	1414
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)	169	1430	19	8	2025	71	45	7	26	245	1	286
RTOR Reduction (vph)	0	1	0	0	2	0	0	25	0	0	0	55
Lane Group Flow (vph)	169	1448	0	8	2094	0	45	8	0	122	124	231
Conf. Peds. (#/hr)	19		21	21		19	37		28	28		37
Heavy Vehicles (%)	10%	3%	11%	0%	2%	3%	3%	0%	3%	3%	0%	6%
Bus Blockages (#/hr)	0	4	0	0	4	0	0	0	0	0	0	5
Turn Type	pm+pt	NA		Perm	NA		Split	NA		Split	NA	pm+ov
Protected Phases	5	2		6			7	7		4	4	5
Permitted Phases	2			6								4
Actuated Green, G (s)	94.5	94.5		80.2	80.2		5.3	5.3		14.6	14.6	24.9
Effective Green, g (s)	94.5	94.5		80.2	80.2		5.3	5.3		14.6	14.6	24.9
Actuated g/C Ratio	0.73	0.73		0.62	0.62		0.04	0.04		0.11	0.11	0.19
Clearance Time (s)	4.0	7.1		7.1	7.1		4.0	4.0		4.5	4.5	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	187	2433		189	2078		69	56		178	181	270
v/s Ratio Prot	c0.07	0.43		c0.62			c0.03	0.01		0.08	0.08	c0.07
v/s Ratio Perm	0.59			0.03								0.10
v/c Ratio	0.90	0.60		0.04	1.01		0.65	0.14		0.69	0.69	0.86
Uniform Delay, d1	45.0	8.5		9.8	24.9		61.4	60.2		55.5	55.5	50.8
Progression Factor	1.57	0.39		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	32.8	0.8		0.4	21.6		20.0	1.2		10.4	10.2	22.3
Delay (s)	103.4	4.2		10.2	46.5		81.4	61.3		65.9	65.7	73.2
Level of Service	F	A		B	D		F	E		E	E	E
Approach Delay (s)		14.5			46.4			72.9			69.8	
Approach LOS		B			D			E			E	
Intersection Summary												
HCM 2000 Control Delay		37.8			HCM 2000 Level of Service				D			
HCM 2000 Volume to Capacity ratio		0.96										
Actuated Cycle Length (s)		130.0			Sum of lost time (s)			19.6				
Intersection Capacity Utilization		95.9%			ICU Level of Service			F				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
6: Platt's Lane & Cherryhill Place

Future Total 2035 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	129	10	106	21	5	13	124	302	31	12	469	158
Future Volume (Veh/h)	129	10	106	21	5	13	124	302	31	12	469	158
Sign Control		Stop			Stop			Free			Free	
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)	129	10	106	21	5	13	124	302	31	12	469	158
Pedestrians		35			19			23			20	
Lane Width (m)		3.7			3.7			3.1			3.5	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		3			2			2			2	
Right turn flare (veh)												
Median type							None				None	
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1192	1207	606	1212	1270	356	662			352		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1192	1207	606	1212	1270	356	662			352		
tC, single (s)	7.2	6.5	6.3	7.1	6.5	6.2	4.2			4.7		
tC, 2 stage (s)												
tF (s)	3.6	4.0	3.4	3.5	4.0	3.3	2.3			2.7		
p0 queue free %	0	93	77	78	96	98	86			99		
cM capacity (veh/h)	124	149	462	96	136	668	865			933		
Direction, Lane #												
Volume Total	245	39	124	333	12	627						
Volume Left	129	21	124	0	12	0						
Volume Right	106	13	0	31	0	158						
cSH	183	142	865	1700	933	1700						
Volume to Capacity	1.34	0.27	0.14	0.20	0.01	0.37						
Queue Length 95th (m)	108.1	8.0	3.8	0.0	0.3	0.0						
Control Delay (s)	234.1	39.7	9.9	0.0	8.9	0.0						
Lane LOS	F	E	A		A							
Approach Delay (s)	234.1	39.7	2.7		0.2							
Approach LOS	F	E										
Intersection Summary												
Average Delay					43.6							
Intersection Capacity Utilization					70.2%		ICU Level of Service			C		
Analysis Period (min)					15							

HCM Unsignalized Intersection Capacity Analysis
101: Beaverbrook Avenue & Street A/Westfield Drive

Future Total 2035 PM Peak Hour
05/28/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	10	24	15	29	0	5	2	22	19	20	0
Future Volume (Veh/h)	0	10	24	15	29	0	5	2	22	19	20	0
Sign Control		Stop			Stop			Free			Free	
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)	0	10	24	15	29	0	5	2	22	19	20	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)							319					
pX, platoon unblocked												
vC, conflicting volume	96	92	20	110	81	13	20			24		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	96	92	20	110	81	13	20			24		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	98	98	96	100	100			99		
cM capacity (veh/h)	853	786	1058	831	797	1067	1596			1591		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	34	44	29	39								
Volume Left	0	15	5	19								
Volume Right	24	0	22	0								
cSH	960	808	1596	1591								
Volume to Capacity	0.04	0.05	0.00	0.01								
Queue Length 95th (m)	0.8	1.3	0.1	0.3								
Control Delay (s)	8.9	9.7	1.3	3.6								
Lane LOS	A	A	A	A								
Approach Delay (s)	8.9	9.7	1.3	3.6								
Approach LOS	A	A										
Intersection Summary												
Average Delay		6.2										
Intersection Capacity Utilization		20.5%	ICU Level of Service	A								
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
102: Street B & Beaverbrook Avenue

Future Total 2035 PM Peak Hour
05/28/2021



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	37	30	0	2	6	2
Future Volume (Veh/h)	37	30	0	2	6	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	37	30	0	2	6	2
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			67		54	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			67		54	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1535		954	1016
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	67	2	8			
Volume Left	0	0	6			
Volume Right	30	0	2			
cSH	1700	1535	969			
Volume to Capacity	0.04	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.2			
Control Delay (s)	0.0	0.0	8.7			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.7			
Approach LOS			A			
Intersection Summary						
Average Delay		0.9				
Intersection Capacity Utilization		13.8%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
103: Street A & Street B

Future Total 2035 PM Peak Hour
05/28/2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↔
Traffic Volume (veh/h)	5	0	5	8	0	15
Future Volume (Veh/h)	5	0	5	8	0	15
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)	5	0	5	8	0	15
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	24	9			13	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	24	9			13	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	992	1073			1606	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	13	15			
Volume Left	5	0	0			
Volume Right	0	8	0			
cSH	992	1700	1606			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.3				
Intersection Capacity Utilization		13.3%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
104: Street B/Proposed Condo Road & Street A

Future Total 2035 PM Peak Hour
05/28/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	8	0	27	5	2	0	0	18	8	0	0
Future Volume (Veh/h)	0	8	0	27	5	2	0	0	18	8	0	0
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)	0	8	0	27	5	2	0	0	18	8	0	0
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		7			8			68	69	8	86	68
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol		7			8			68	69	8	86	68
tC, single (s)		4.1			4.1			7.1	6.5	6.2	7.1	6.5
tC, 2 stage (s)												
tF (s)		2.2			2.2			3.5	4.0	3.3	3.5	4.0
p0 queue free %		100			98			100	100	98	99	100
cM capacity (veh/h)		1614			1612			913	808	1074	874	809
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	8	34	18	8								
Volume Left	0	27	0	8								
Volume Right	0	2	18	0								
cSH	1614	1612	1074	874								
Volume to Capacity	0.00	0.02	0.02	0.01								
Queue Length 95th (m)	0.0	0.4	0.4	0.2								
Control Delay (s)	0.0	5.8	8.4	9.2								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	5.8	8.4	9.2								
Approach LOS			A	A								
Intersection Summary												
Average Delay			6.2									
Intersection Capacity Utilization		21.9%	ICU Level of Service	A								
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
105: Street B & Proposed Condo Road

Future Total 2035 PM Peak Hour
05/28/2021



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Traffic Volume (veh/h)	0	3	5	0	15	15
Future Volume (Veh/h)	0	3	5	0	15	15
Sign Control	Stop			Free		
Grade	0%			0%		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	5	0	15	15
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	50	5			5	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	50	5			5	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	950	1078			1616	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	3	5	30			
Volume Left	0	0	15			
Volume Right	3	0	0			
cSH	1078	1700	1616			
Volume to Capacity	0.00	0.00	0.01			
Queue Length 95th (m)	0.1	0.0	0.2			
Control Delay (s)	8.3	0.0	3.7			
Lane LOS	A		A			
Approach Delay (s)	8.3	0.0	3.7			
Approach LOS	A					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			18.3%	ICU Level of Service	A	
Analysis Period (min)			15			

APPENDIX G

Traffic Warrant Summary



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

Traffic Signal Warrant - Input Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Background	Horizon Year:	2026	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	Number of Lanes:	2 or more
Number of Legs:	Three ("T" Intersection)	Intersection Type:	Existing

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Oxford Street West						Minor: Beaverbrook Avenue						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	0	1588	26	83	867	0	21	0	209	0	0	0	0
PM	0	1182	25	183	1785	0	32	0	176	0	0	0	0
AHV ¹	0	693	13	67	663	0	13	0	96	0	0	0	0

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then $AHV = (AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then $AHV = AM_{PHV} / 2$ or $AHV = PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	1545	Justification 2A: Major Street Both Approaches	1436
Justification 1B: Minor Street Both Approaches	109	Justification 2B: Traffic Crossing Major Street	13

Note: The <u>crossing</u> volume is defined as the sum of:			
(1) Left turns from both minor street approaches:			13
(2) The heaviest through volume from the minor street:			0
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:			0
(a) The left turn volume > 120 vph	67	FALSE	
(b) The left turn volume plus the opposing volume > 720 vph	760	TRUE	
(4) Pedestrians crossing the major street:			0
	Total		13

Traffic Signal Warrant - Output Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Background	Horizon Year:	2026	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	720	600	900
1B: Minor Street Both Approaches	120	170	120	170
2A: Major Street Both Approaches	480	720	600	900
2B: Traffic Crossing Major Street	50	75	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).

The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	Existing Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	900	120%	-	1080
1B: Minor Street Both Approaches	170	120%	150%	306
2A: Major Street Both Approaches	900	120%	-	1080
2B: Traffic Crossing Major Street	75	120%	-	90

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T" intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	1545	1080	100%	No
1B: Minor Street Both Approaches	109	306	36%	
2A: Major Street Both Approaches	1436	1080	100%	No
2B: Traffic Crossing Major Street	13	90	14%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.

When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

Traffic Signal Warrant - Input Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Background	Horizon Year:	2035	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	Number of Lanes:	2 or more
Number of Legs:	Three ("T" Intersection)	Intersection Type:	Existing

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Oxford Street West						Minor: Beaverbrook Avenue						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	0	1754	29	92	959	0	23	0	230	0	0	0	0
PM	0	1306	28	200	1972	0	35	0	195	0	0	0	0
AHV ¹	0	765	14	73	733	0	15	0	106	0	0	0	0

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then $AHV = (AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then $AHV = AM_{PHV} / 2$ or $AHV = PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	1706	Justification 2A: Major Street Both Approaches	1585
Justification 1B: Minor Street Both Approaches	121	Justification 2B: Traffic Crossing Major Street	15

Note: The <u>crossing</u> volume is defined as the sum of:		
(1) Left turns from both minor street approaches:		15
(2) The heaviest through volume from the minor street:		0
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:		0
(a) The left turn volume > 120 vph	73	FALSE
(b) The left turn volume plus the opposing volume > 720 vph	838	TRUE
(4) Pedestrians crossing the major street:		0
	Total	15

Traffic Signal Warrant - Output Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Background	Horizon Year:	2035	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	720	600	900
1B: Minor Street Both Approaches	120	170	120	170
2A: Major Street Both Approaches	480	720	600	900
2B: Traffic Crossing Major Street	50	75	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).

The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	Existing Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	900	120%	-	1080
1B: Minor Street Both Approaches	170	120%	150%	306
2A: Major Street Both Approaches	900	120%	-	1080
2B: Traffic Crossing Major Street	75	120%	-	90

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T" intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	1706	1080	100%	No
1B: Minor Street Both Approaches	121	306	40%	
2A: Major Street Both Approaches	1585	1080	100%	No
2B: Traffic Crossing Major Street	15	90	17%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.

When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

Traffic Signal Warrant - Input Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2026	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	Number of Lanes:	2 or more
Number of Legs:	Four	Intersection Type:	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise.
The Number of Lanes greater than 1 only needs to be for one direction along the major road.
An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Oxford Street West						Minor: Beaverbrook Avenue						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	6	1588	26	83	867	18	21	7	209	60	22	0	0
PM	8	1182	25	183	1785	56	32	25	176	44	10	0	0
AHV ¹	4	693	13	67	663	19	13	8	96	26	8	0	0

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then $AHV = (AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then $AHV = AM_{PHV} / 2$ or $AHV = PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	1610	Justification 2A: Major Street Both Approaches	1459
Justification 1B: Minor Street Both Approaches	151	Justification 2B: Traffic Crossing Major Street	47

Note: The <u>crossing</u> volume is defined as the sum of:			
(1) Left turns from both minor street approaches:			39
(2) The heaviest through volume from the minor street:			8
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:			0
(a) The left turn volume > 120 vph	67	FALSE	
(b) The left turn volume plus the opposing volume > 720 vph	760	TRUE	
(4) Pedestrians crossing the major street:			0
	Total		47

Traffic Signal Warrant - Output Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2026	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	720	600	900
1B: Minor Street Both Approaches	120	170	120	170
2A: Major Street Both Approaches	480	720	600	900
2B: Traffic Crossing Major Street	50	75	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).

The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	900	150%	-	1350
1B: Minor Street Both Approaches	170	150%	100%	255
2A: Major Street Both Approaches	900	150%	-	1350
2B: Traffic Crossing Major Street	75	150%	-	113

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T" intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	1610	1350	100%	No
1B: Minor Street Both Approaches	151	255	59%	
2A: Major Street Both Approaches	1459	1350	100%	No
2B: Traffic Crossing Major Street	47	113	42%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.

When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

Traffic Signal Warrant - Input Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2035	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	Number of Lanes:	2 or more
Number of Legs:	Four	Intersection Type:	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise. The Number of Lanes greater than 1 only needs to be for one direction along the major road. An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Oxford Street West						Minor: Beaverbrook Avenue						Pedestrians Crossing Major
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
AM	20	1804	29	92	959	80	23	29	230	273	105	62	0
PM	37	1306	28	200	2022	180	35	114	195	211	46	20	0
AHV ¹	14	778	14	73	745	65	15	36	106	121	38	21	0

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then $AHV = (AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then $AHV = AM_{PHV} / 2$ or $AHV = PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	2026	Justification 2A: Major Street Both Approaches	1689
Justification 1B: Minor Street Both Approaches	337	Justification 2B: Traffic Crossing Major Street	174

Note: The <u>crossing</u> volume is defined as the sum of:		
(1) Left turns from both minor street approaches:		136
(2) The heaviest through volume from the minor street:		38
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:		0
(a) The left turn volume > 120 vph	73	FALSE
(b) The left turn volume plus the opposing volume > 720 vph	851	TRUE
(4) Pedestrians crossing the major street:		0
	Total	174

Traffic Signal Warrant - Output Sheet

Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2035	Analyst:	SR

Study Intersection Summary

Major Street:	Oxford Street West	Direction:	East/West
Minor Street:	Beaverbrook Avenue	Direction:	North/South

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	720	600	900
1B: Minor Street Both Approaches	120	170	120	170
2A: Major Street Both Approaches	480	720	600	900
2B: Traffic Crossing Major Street	50	75	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).

The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	900	150%	-	1350
1B: Minor Street Both Approaches	170	150%	100%	255
2A: Major Street Both Approaches	900	150%	-	1350
2B: Traffic Crossing Major Street	75	150%	-	113

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T" intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	2026	1350	100%	Yes
1B: Minor Street Both Approaches	337	255	100%	
2A: Major Street Both Approaches	1689	1350	100%	Yes
2B: Traffic Crossing Major Street	174	113	100%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.

When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Warranted

Traffic Signal Warrant - Input Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2026	Analyst:	SR

Study Intersection Summary

Major Street:	Proudfoot Lane	Direction:	North/South
Minor Street:	Beaverbrook Avenue	Direction:	East/West

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	Number of Lanes:	1
Number of Legs:	Four	Intersection Type:	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise. The Number of Lanes greater than 1 only needs to be for one direction along the major road. An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Proudfoot Lane						Minor: Beaverbrook Avenue						Pedestrians Crossing Major
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	237	7	0	50	11	6	6	4	99	12	6	11	0
PM	154	6	5	19	10	14	20	9	234	2	0	42	0
AHV ¹	98	3	1	17	5	5	7	3	83	4	2	13	0

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then $AHV = (AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then $AHV = AM_{PHV} / 2$ or $AHV = PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	241	Justification 2A: Major Street Both Approaches	129
Justification 1B: Minor Street Both Approaches	112	Justification 2B: Traffic Crossing Major Street	14

Note: The <u>crossing</u> volume is defined as the sum of:		
(1) Left turns from both minor street approaches:		11
(2) The heaviest through volume from the minor street:		3
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:		0
(a) The left turn volume > 120 vph	98	FALSE
(b) The left turn volume plus the opposing volume > 720 vph	103	FALSE
(4) Pedestrians crossing the major street:		0
	Total	14

Traffic Signal Warrant - Output Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2026	Analyst:	SR

Study Intersection Summary

Major Street:	Proudfoot Lane	Direction:	North/South
Minor Street:	Beaverbrook Avenue	Direction:	East/West

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	720	600	900
1B: Minor Street Both Approaches	120	170	120	170
2A: Major Street Both Approaches	480	720	600	900
2B: Traffic Crossing Major Street	50	75	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).

The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	720	150%	-	1080
1B: Minor Street Both Approaches	170	150%	100%	255
2A: Major Street Both Approaches	720	150%	-	1080
2B: Traffic Crossing Major Street	75	150%	-	113

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T" intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	241	1080	22%	No
1B: Minor Street Both Approaches	112	255	44%	
2A: Major Street Both Approaches	129	1080	12%	No
2B: Traffic Crossing Major Street	14	113	12%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.

When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

Traffic Signal Warrant - Input Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2035	Analyst:	SR

Study Intersection Summary

Major Street:	Proudfoot Lane	Direction:	North/South
Minor Street:	Beaverbrook Avenue	Direction:	East/West

Intersection Details for Warrant Parameters

Flow Conditions:	Restricted Flow (Urban)	Number of Lanes:	1
Number of Legs:	Four	Intersection Type:	New

Notes: "Free Flow" is used when the operating speed is greater than or equal to 70km/h, "Restricted Flow" otherwise. The Number of Lanes greater than 1 only needs to be for one direction along the major road. An intersection is considered "New" if at least 1-leg is added to an existing intersection.

Input Volumes and Average Hourly Volume Determination

Peak Hour	Major: Proudfoot Lane						Minor: Beaverbrook Avenue						Pedestrians Crossing Major
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	263	11	25	10	37	20	10	34	110	56	36	3	0
PM	171	39	60	17	10	16	27	101	260	20	46	2	0
AHV ¹	109	13	21	7	12	9	9	34	93	19	21	1	0

1. The AHV is determined by the availability of the peak hour estimates. If both the AM and PM Peak Hour Volume estimate is available then $AHV = (AM_{PHV} + PM_{PHV}) / 4$. In the case that only one estimate is available then $AHV = AM_{PHV} / 2$ or $AHV = PM_{PHV} / 2$.

Determination of Justification Volumes (Based on AHV)

Justification 1A: All Approach Lanes	348	Justification 2A: Major Street Both Approaches	171
Justification 1B: Minor Street Both Approaches	177	Justification 2B: Traffic Crossing Major Street	62

Note: The <u>crossing</u> volume is defined as the sum of:		
(1) Left turns from both minor street approaches:		28
(2) The heaviest through volume from the minor street:		34
(3) 50% of the heavier left turn movement from major street when both of the following criteria are met:		0
(a) The left turn volume > 120 vph	109	FALSE
(b) The left turn volume plus the opposing volume > 720 vph	121	FALSE
(4) Pedestrians crossing the major street:		0
	Total	62

Traffic Signal Warrant - Output Sheet Justification 7 - Projected Volumes

Based Ontario Traffic Manual Book 12 - Traffic Signals (March 2012)

Project and Scenario Summary

Project:	Mud Creek (Beaverbrook)			Project No.:	16126
				Date:	2021-05-28
Horizon:	Future Total	Horizon Year:	2035	Analyst:	SR

Study Intersection Summary

Major Street:	Proudfoot Lane	Direction:	North/South
Minor Street:	Beaverbrook Avenue	Direction:	East/West

Summary of Base Justification Thresholds

Justification	1 Approach Lane		2 or More Approach Lanes	
	Free Flow	Restricted Flow	Free Flow	Restricted Flow
1A: All Approach Lanes	480	720	600	900
1B: Minor Street Both Approaches	120	170	120	170
2A: Major Street Both Approaches	480	720	600	900
2B: Traffic Crossing Major Street	50	75	50	75

The above values are taken from Table 12 and Table 13 from OTM Book 12 (March 2012).

The grey shaded values are provided for reference only, and are not applicable to the study intersection.

Adjusted Justification Thresholds for Study Intersection Conditions

Justification	Base Threshold	New Intersection	"T" Intersection	Final Threshold
1A: All Approach Lanes	720	150%	-	1080
1B: Minor Street Both Approaches	170	150%	100%	255
2A: Major Street Both Approaches	720	150%	-	1080
2B: Traffic Crossing Major Street	75	150%	-	113

The above adjustments are taken from OTM Book 12 (March 2012) the "T" Intersection adjustment only applies to Justification 1B, and is a 50% increase on the threshold when the study intersection is a "T" intersection. Otherwise a value of 100% is used.

Warrant Calculation

Justification	Study Intersection Justification Volume	Justification Threshold	Percentage Warrant	Warrant Met?
1A: All Approach Lanes	348	1080	32%	No
1B: Minor Street Both Approaches	177	255	69%	
2A: Major Street Both Approaches	171	1080	16%	No
2B: Traffic Crossing Major Street	62	113	55%	

Notes: In the case of Justification 7 based on AHV both Warrant 1 and 2 must be met 100%, which requires both the A and B part of each warrant being equal to 100%.

When calculating the percentage, any value greater than 100% is expressed as 100%.

Based on OTM Book 12's Signal Warrant Justification 7 and the estimated AHV for the subject study intersection a signal is:

Not Warranted

AM All-Way Stop Control Warrant Summary - Future Total 2026

Intersection	Major Road	Minor Road	Major Road Volume	Minor Road Volume	Total Inflow	Number of Legs	Major Volume Split	Minor Volume Split	AWSC Warranted? ¹	Comments
Beaverbrook Avenue & Westfield Drive / Street A	Westfield Drive / Street A	Beaverbrook Avenue	86	81	167	4	51%	49%	No	Based on volume
Beaverbrook Avenue & Street B	Beaverbrook Avenue	Street B	71	12	83	3	86%	14%	No	Based on volume
Street A & Street B	Street B	Street A	31	11	42	3	74%	26%	No	Based on volume
Street A & Proposed Condo Road / Street B	Proposed Condo Road / Street B	Street A	58	48	106	4	55%	45%	No	Based on volume
Street B & Proposed Condo Road	Street B	Proposed Condo Road	12	4	16	3	3%	1%	No	Based on volume
Beaverbrook Avenue & Proudfoot Lane	Proudfoot Lane	Beaverbrook Avenue	311	138	449	4	69%	31%	No	Based on splits

¹ As per OTM Book 5 Regulatory Signs, all-way stop controls may be considered when: total vehicle volume on all intersection approaches exceeds 350 for the highest peak hour recorded; and volume split does not exceed 75/25 for 3-way control or 65/35 for four-way control. Volume is defined as vehicles only

PM All-Way Stop Control Warrant Summary - Future Total 2026

Intersection	Major Road	Minor Road	Major Road Volume	Minor Road Volume	Total Inflow	Number of Legs	Major Volume Split	Minor Volume Split	AWSC Warranted? ¹	Comments
Beaverbrook Avenue & Westfield Drive / Street A	Beaverbrook Avenue ²	Westfield Drive / Street A	116	79	195	4	59%	41%	No	Based on volume
Beaverbrook Avenue & Street B	Beaverbrook Avenue	Street B	75	10	85	3	88%	12%	No	Based on volume
Street A & Street B	Street A	Street B ²	26	23	49	3	53%	47%	No	Based on volume
Street A & Proposed Condo Road / Street B	Street A	Proposed Condo Road / Street B ²	92	34	126	4	73%	27%	No	Based on volume
Street B & Proposed Condo Road	Street B	Proposed Condo Road	19	5	24	3	4%	1%	No	Based on volume
Beaverbrook Avenue & Proudfoot Lane	Beaverbrook Avenue	Proudfoot Lane ²	307	208	515	4	60%	40%	Yes	Based on splits

¹ As per OTM Book 5 Regulatory Signs, all-way stop controls may be considered when: total vehicle volume on all intersection approaches exceeds 350 for the highest peak hour recorded; and volume split does not exceed 75/25 for 3-way control or 65/35 for four-way control. Volume is defined as vehicles only

² Major and Minor Road switched based on volumes in the PM peak hour

APPENDIX H

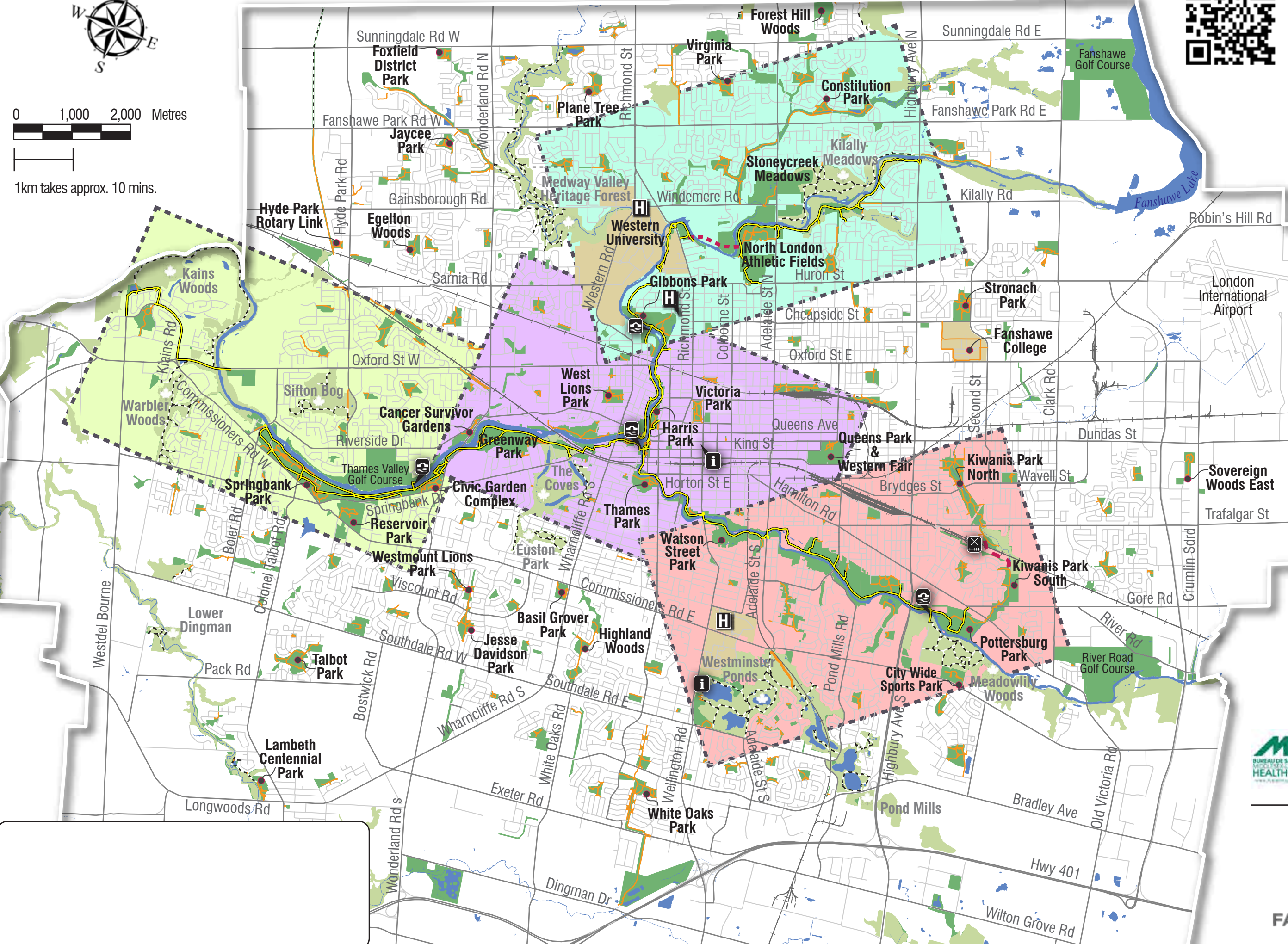
Transportation Demand Management Information Package



SAM KATZ HOLDINGS LIMITED

TRANSPORTATION IMPACT STUDY
THE BEAVERBROOK COMMUNITY – 323
OXFORD STREET WEST, 92 PROUDFOOT
LANE, 825 PROUDFOOT LANE, LONDON, ON

London's 2019 Walk Map - At a Glance



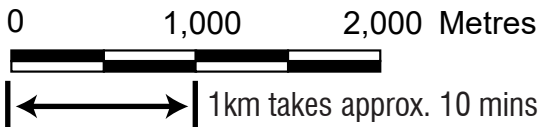
Legend

- Major Roads
- Neighbourhood Streets
- Highways
- Hospitals
- Highway Crossing
- Highway River Crossing
- Information Office
- Interchanges (over and under crossings)
- Interchanges
- Environmentally Significant Areas - ESA (bicycling permitted)
- Types**
- Thames Valley Parkway
- Multi-use Pathways
- Walking Trails - Unpaved
- Commuting Path
- Thames Valley Parkway
- Thames Valley Parkway North Branch
- Thames Valley Parkway
- Thames Valley Parkway North Branch

Partners



London's 2019 Walk Map - Focus Areas



Major Roads Neighbourhood Streets Railways

Waterways (River and Creeks) Parks Environmentally Significant Areas - ESA (no cycling permitted)

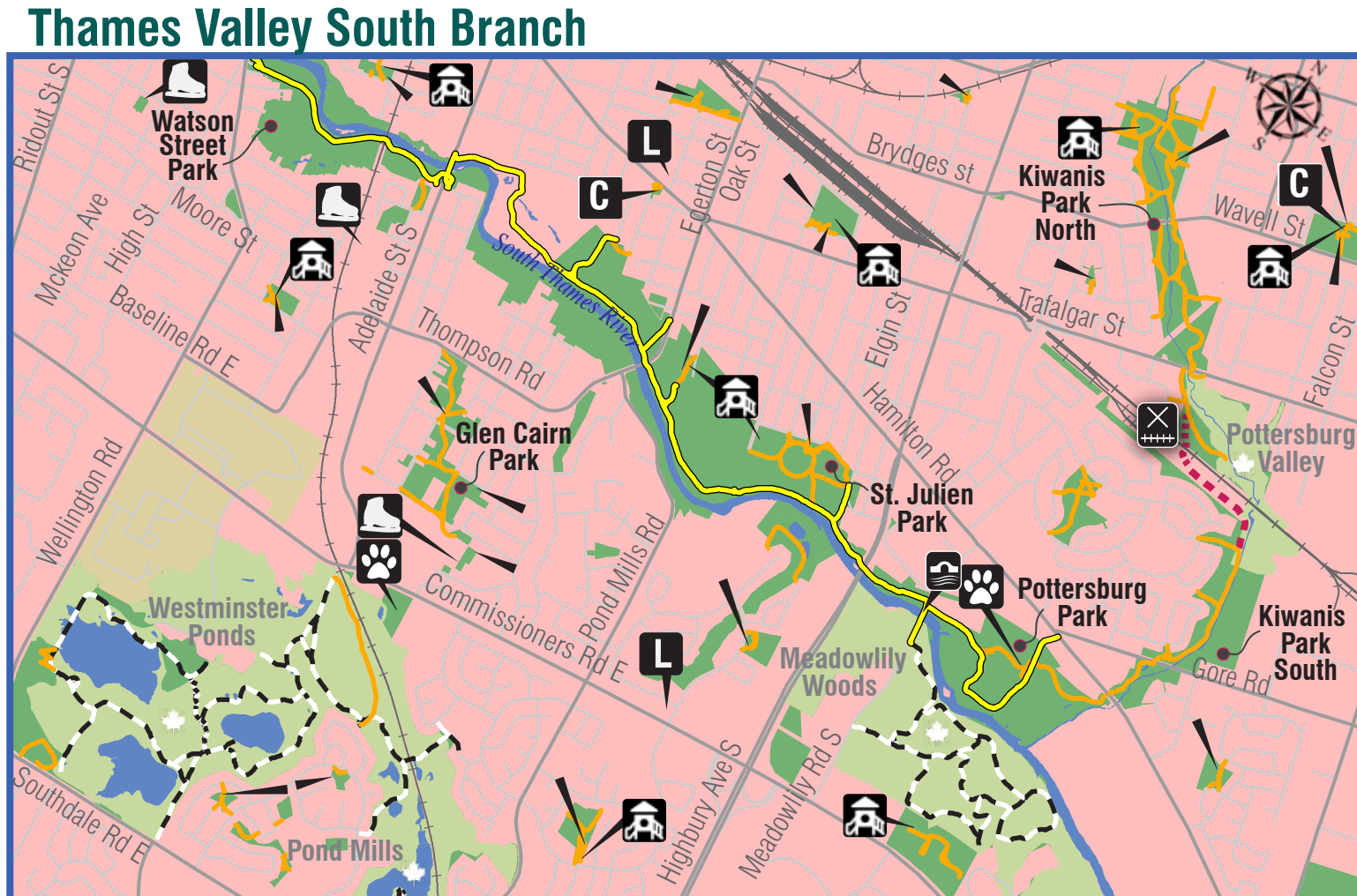
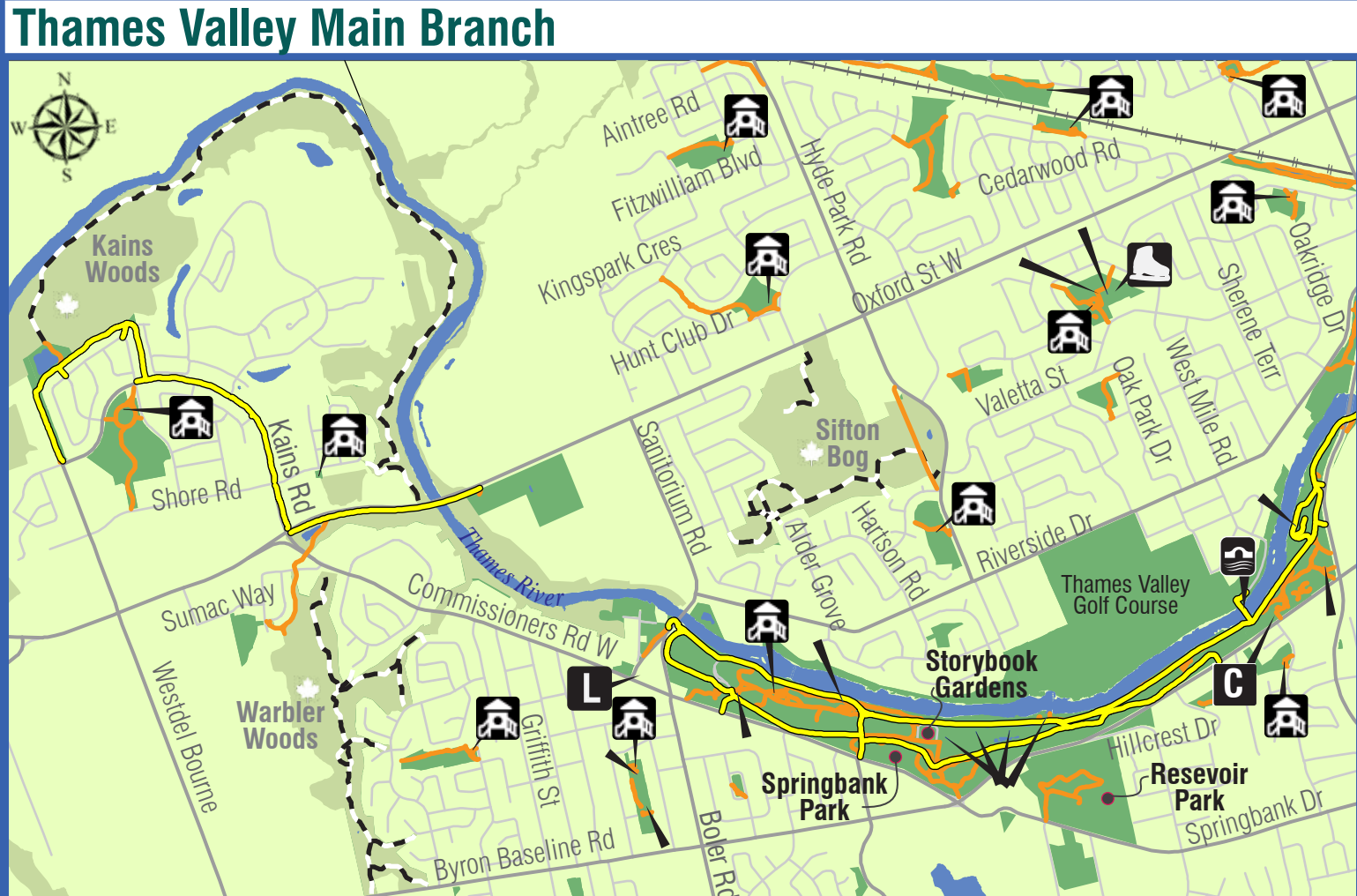
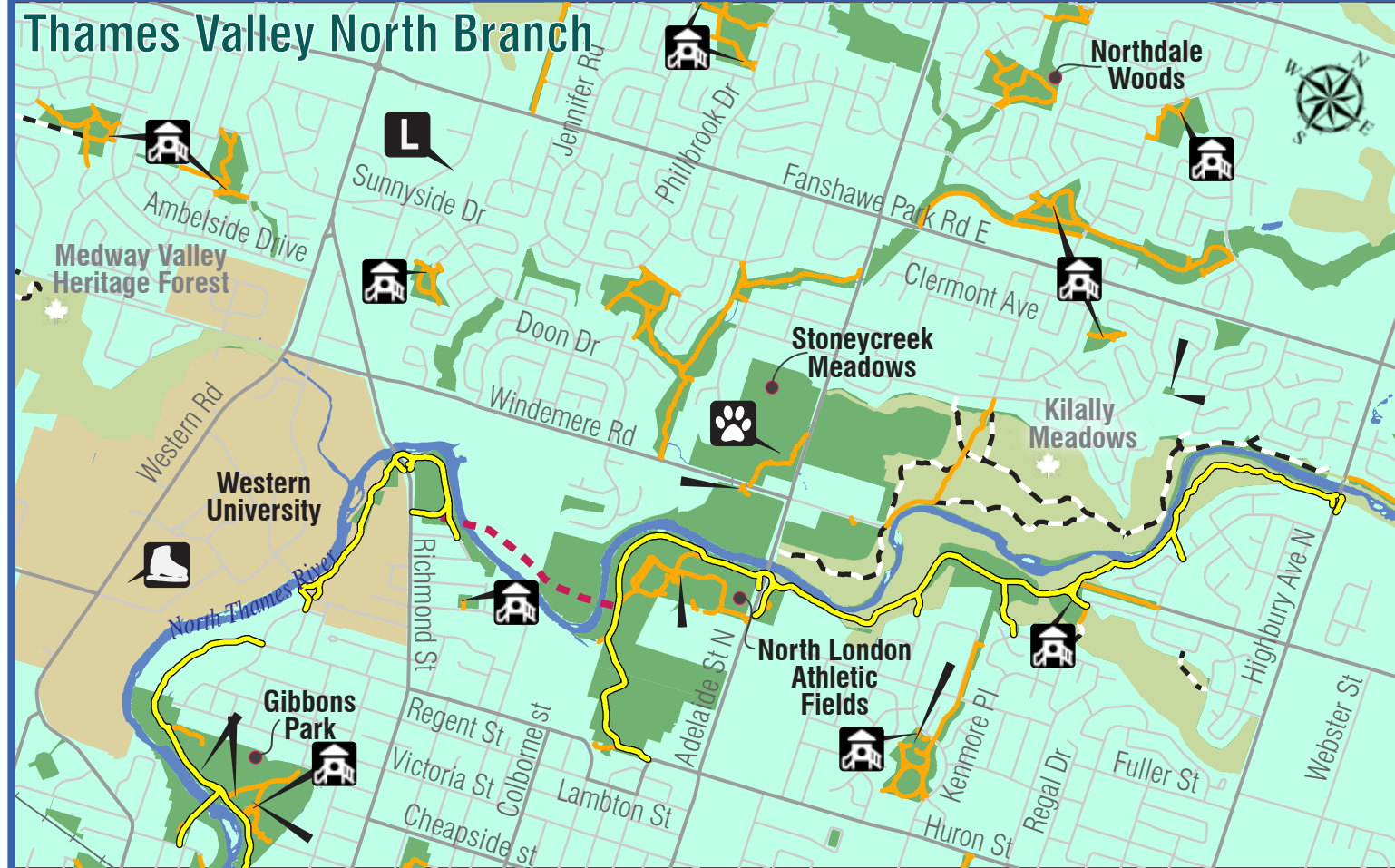
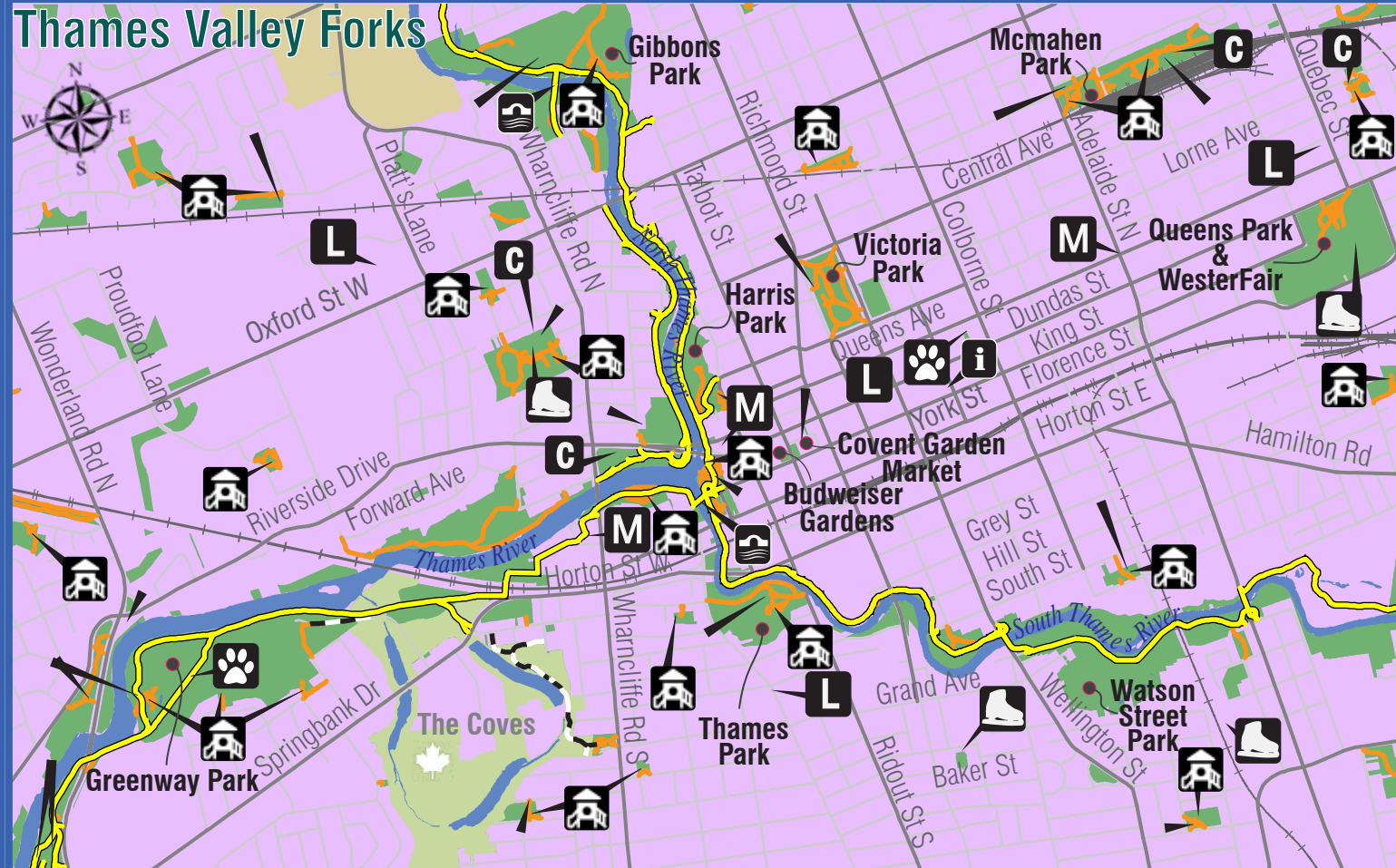
Walking Path Types

- Thames Valley Parkway
- Other Multi-use Pathways
- Walking Trails: Unpaved
- Upcoming Path

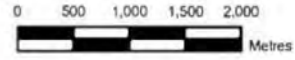
Community Features

- Arena
- Boat Launch
- Community Centre
- Hospitals

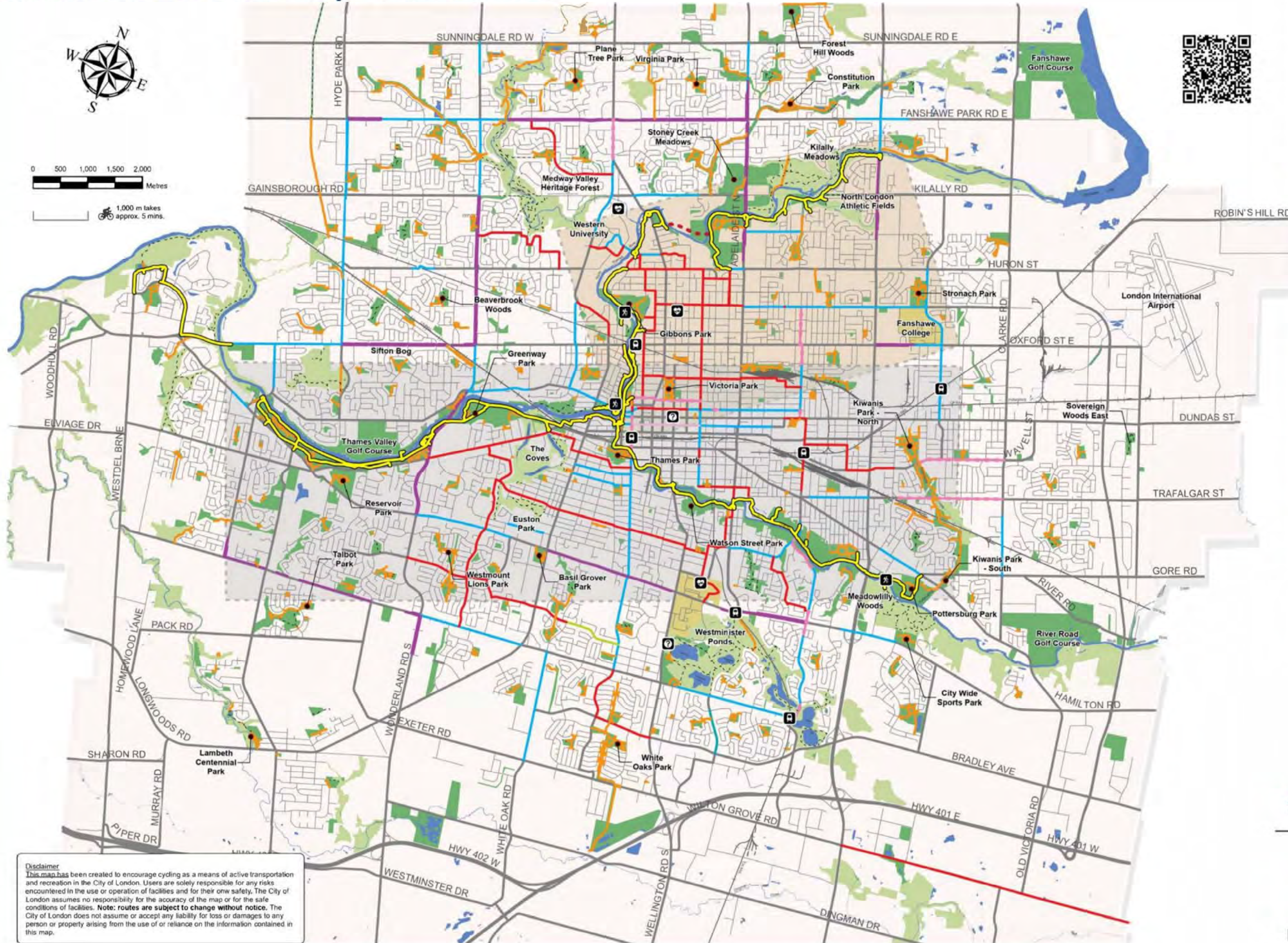
- Library
- Museum
- Off-Leash Dog Park
- Pathway River Crossing
- Play Structure
- Pool
- Railway Crossing
- Tourism Information Office
- Washrooms



London's 2020 Bike Map - At a Glance



1,000 m takes approx. 5 mins.



- Major Road
- Neighbourhood Street
- Railway
- 🏥 Hospital
- 🚶 Railway Crossing
- 🌊 Pathway River Crossing
- 📍 Tourism Information Office
- 🌊 Waterway (River & Creeks)
- 🌳 Park
- 🚫 ESA (No Cycling Permitted)
- Bike Route Types**
- 🟡 Thames Valley Parkway
- ⋯ Walking Trail
- 🟢 Bike Lane
- 🟠 Bike Lane & Shared Parking
- 🔴 Bike Road Route - Signed
- 🟡 Buffered Bike Lane
- 🟣 Path Adjacent to Street
- 🟠 Cycle Track
- ⋯ Sharrow
- 🟠 Other Multi-Use Pathway
- ⋯ Upcoming Path
- Focus Areas**
- 🟡 Thames Valley Main & South Branches
- 🟠 Thames Valley North Branch

Disclaimer
 This map has been created to encourage cycling as a means of active transportation and recreation in the City of London. Users are solely responsible for any risks encountered in the use or operation of facilities and for their own safety. The City of London assumes no responsibility for the accuracy of the map or for the safe conditions of facilities. **Note: routes are subject to change without notice.** The City of London does not assume or accept any liability for loss or damages to any person or property arising from the use of or reliance on the information contained in this map.

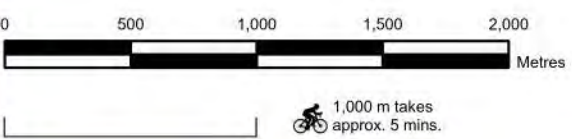
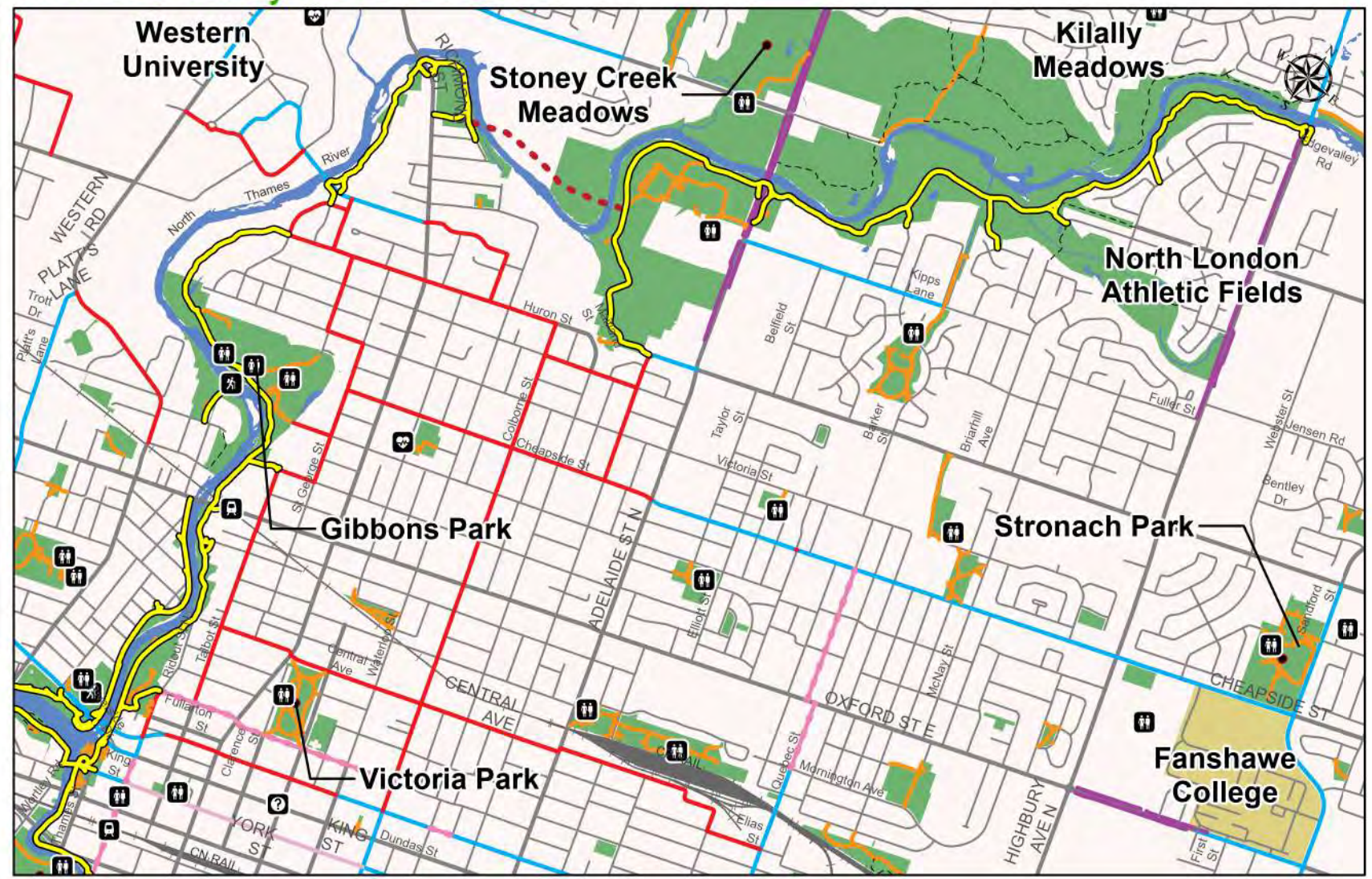
Partners



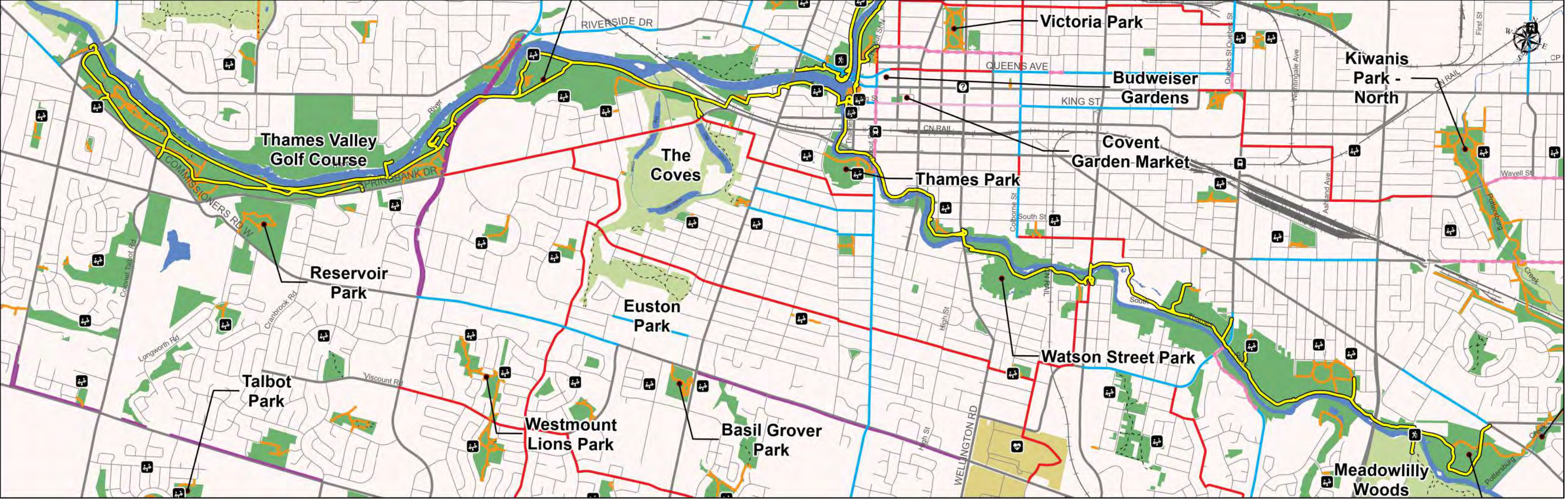
London's 2020 Bike Map - Focus Areas

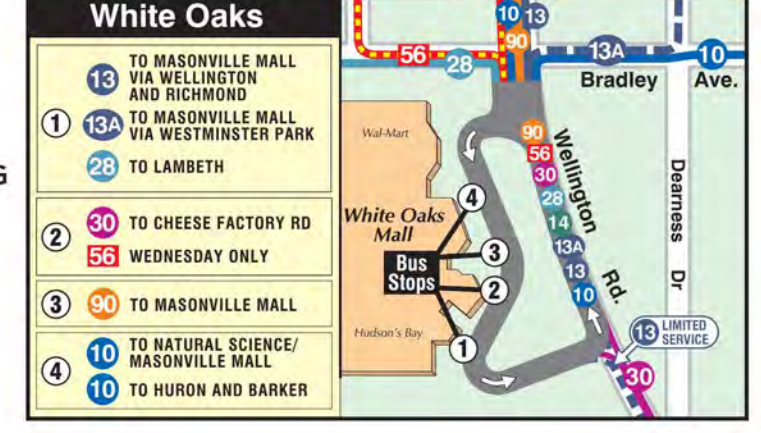
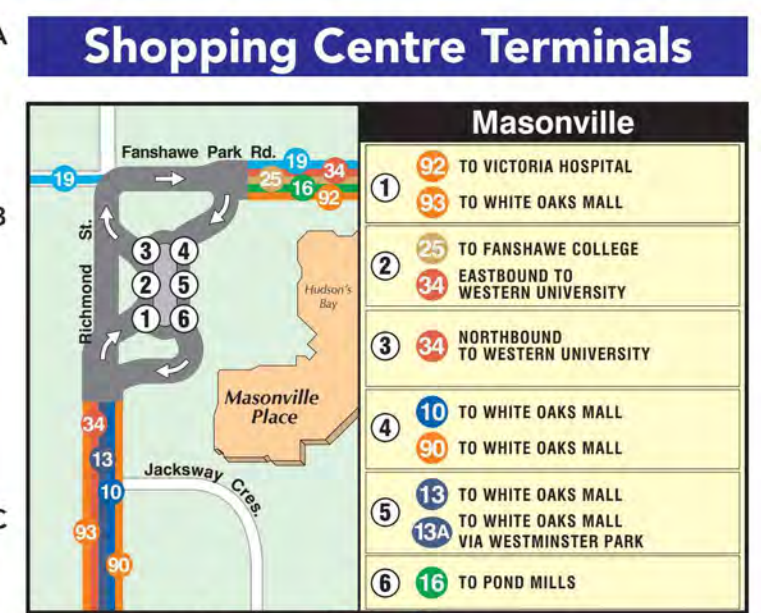
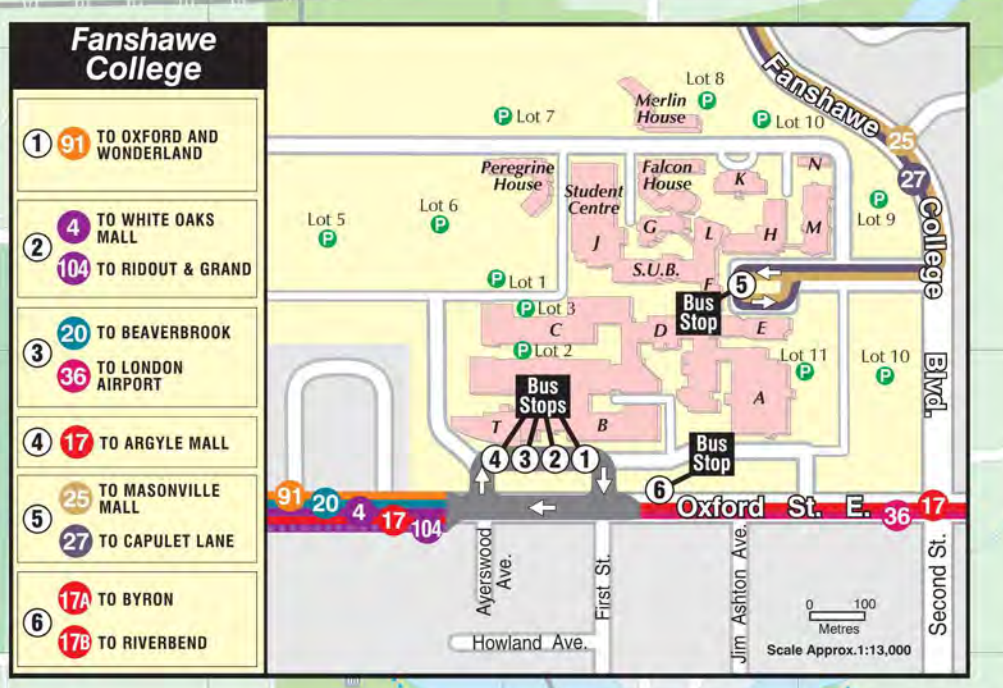
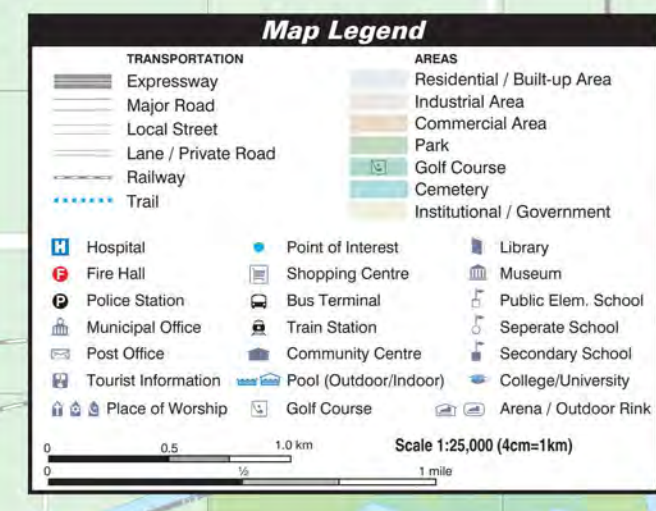
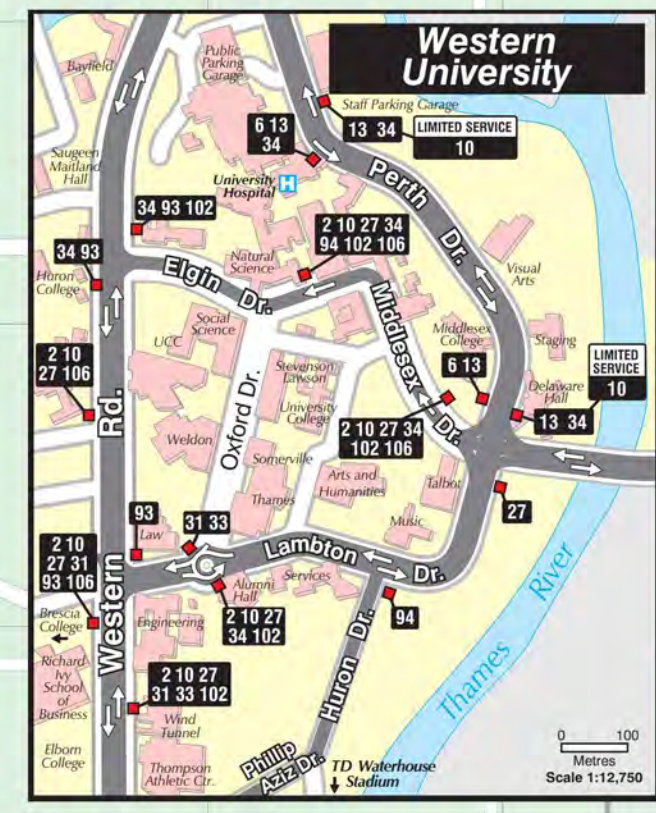
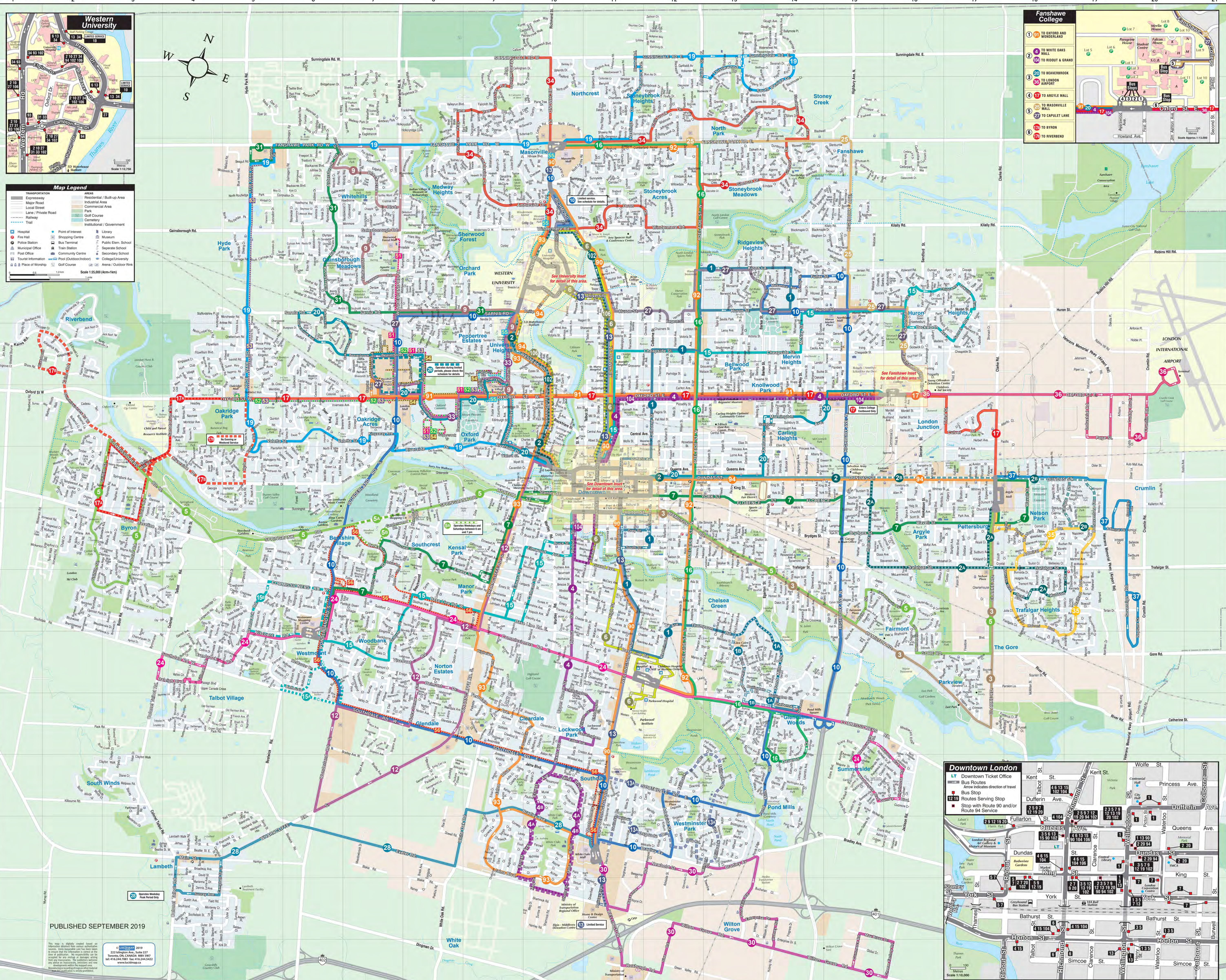
Thames Valley North Branch

	Major Road		Hospital	Bike Route Types	
	Neighbourhood Street		Railway Crossing		Thames Valley Parkway
	Railway		Pathway River Crossing		Walking Trail
	Waterway (River & Creeks)		Playground		Bike Lane
	ESA (No Cycling Permitted)		Washroom		Bike Lane & Shared Parking
	Park		Community Centre		Bike Road Route - Signed
			Tourism Information Office		Buffered Bike Lane
					Path Adjacent to Street
					Cycle Track
					Sharrow
					Other Multi-Use Pathway
					Upcoming Path



Thames Valley Main & South Branches





Route Information
Boarding the Right Bus:
Some routes cover a common section and then split into "A" and "B" to cover different destinations at the end of the route.

Route Guide table listing route numbers, destinations, and service notes.

