



# LONDON TRANSIT COMMISSION

## Route Structure and Service Guideline Review

FINAL REPORT

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Submitted by:



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## EXECUTIVE SUMMARY

### Background

Dillon Consulting Limited (Dillon) was retained by the London Transit Commission to complete a Route Structure and Service Guideline Review of the existing London Transit system. The purpose of the study is to assess the quality and performance of the existing transit system and:

- Develop a five-year route and service plan which addresses immediate issues and opportunities and recommends improvement to be implemented between 2015 and 2019 (Part 1).
- Develop a route and service strategy which builds on the Part 1 five-year plan and reorients the transit network assuming Rapid Transit as currently being assessed by the Rapid Transit Environmental Assessment is in place.
- Develop a Service Standards document which will set guidelines for service design and provide performance measures to be used when monitoring the success of the system and guiding service decision making.

The study received considerable input and direction from a Project Steering Committee. Dillon worked with the Steering Committee to evaluate the current service (route structure, frequency, and hours of operation) and to identify a preferred transit service network to meet the service quality expectations of London Transit customers within the available hours set out in the 2015-2018 London Transit Business Plan.

For each scenario, various options were assessed and a preferred network was chosen. For the 2015 – 2019 five year service plan, a detailed implementation plan was developed to stage the proposed changes and enhancements over a five year period.

### Service Standards

The report includes recommendations for a new Service Standards document for London Transit. Service Standards provide for a consistent and fair evaluation of both existing and proposed services, and establishes a framework for guiding decisions on how to best serve customers' diverse travel needs within prevailing budgetary and resource limits. The standards discussed in this document are intended to provide guidelines governing the planning and design of the overall service strategy for the London Transit system. They identify the definitions and details of the standards and how they are used in decision making, to ensure that as much as possible transit services are affordable, fair and equitable to all customers.

Using established Service Standards as a guide, London Transit staff are able to rationally evaluate service changes and make adjustments to service within the constraints of budget and resource availability, in order to provide the highest quality service in the most efficient manner possible.

The recommended Service Standards document includes *service design standards*, *service performance standards* and *system-wide measures of success*.

Service design standards present specific criteria for route design and service levels and cover key characteristics of how the service is designed. Included in the service standards document are service design standards that address:

- **System Proximity:** provides a target for access to transit by identifying a maximum walking distance that a customer will have to travel to reach a transit stop.
- **Bus Stop Placement:** provides spacing standards which establish a proper balance between the walking distances for customers and the operational efficiencies of well-spaced stops.
- **Route Directness:** a guideline that influences service design by measuring how much a route should deviate from the most direct path between the start and end points of a route.
- **Transfers:** a guideline that influences service design by indicating a target for the average number of transfers passengers make.
- **Service Levels:** defines a target frequency of service and the service period for each route classification.

Performance measures are used primarily to set desired and achievable goals for the performance of London Transit and permit evaluation and feedback on how well these goals are being met. Included in the service standards document are service performance standards for:

- **Passenger Comfort (Vehicle Load):** A service quality measure which sets a maximum target for passenger load. Corrective actions are identified when the target is continuously exceeded.
- **Service Productivity:** Measures the effectiveness of a service by monitoring the number of passenger boardings per revenue hour of service provided. Corrective actions are identified where routes do not meet the minimum performance target.
- **Service Reliability:** A service quality measure which provides a target for on-time performance of buses (acceptable level is 0 to 5 minutes late at stops with published schedules).
- **Guidelines for Service Expansion:** Provides a guideline for introducing a new bus route or extending an existing route into a new area (based on minimum productivity targets being achieved).

System-wide measures of success are also included which provide an overarching view of the degree to which the London Transit system is achieving broader targets including financial performance and transit mode share.

### Issues, Opportunities and Guiding Principles

The study began with a review of existing service, policy directions within the City of London and consultation with transit customers and the general public. Interest in this study was high. A public drop-in centre held in July 2014 allowed the consulting team to speak with over 100 members of the public. Interviews were also held with over 20 stakeholders/groups in the City. An online survey that was in place for four months also yielded over 3,300 responses from transit customers and non-users.



Transit route and ridership data were reviewed to assess proximity of the service to residents and employees, the overall productivity of routes and services, vehicle crowding, schedule adherence and passenger activity at bus stops.

In addition, policy documents were reviewed to better understand how London Transit fits into the overall municipal context. Direction was taken from the London Plan, including the need to better orient transit routes to designated Transit Villages, Rapid Transit corridors and Urban Corridors where higher density development is planned that is conducive to ridership growth.

These inputs led to development of a number of guiding principles that were used to develop the 2015-2019 Transit Service Plan and the long-term Network Strategy with Rapid Transit in place:

1. **Address Overcrowding and Missed Trips:** Consultation with existing transit customers and several London Transit drivers revealed an issue of overcrowding and missed trips on several routes. A further review of passenger load data confirmed the busiest routes in the system. As such, a key focus of the plan was to improve frequency on routes that experience periodic crowding.
2. **Simplify the Network:** London Transit operates a number of split tail or branch routes to maximize the effectiveness of the service. Over time, some of these branch routes have evolved and have little to do with the main 'trunk' route. Where possible, separating these routes from the larger route would help simplify the schedule and make transit easier to understand.
3. **Continue to Build on the Express Routes:** London Transit's two Express Routes have been very successful and positively received by passengers. Opportunities to expand on the Express Route network and build ridership through improved service levels and enhanced connectivity were explored.
4. **Address Underperforming Routes and Route Segments:** A primary component of the transit review was to assess each corridor and identify whether the 'right amount' of service is being provided. To ensure system resources are being effectively spent, key priorities were to address underperforming routes, minimize duplicate services and address unbalanced routes to better match the level of service provided with the demand.
5. **Improve Weekend and Late Evening Service:** A key issue heard from transit customers and the general public is lack of late evening weekday and weekend service, with a particular focus on Sundays. There are a number of transit routes that do not operate during these periods while others that operate very infrequently (60 minute headway). A focus of the service plan was to improve proximity to transit during off-peak periods and provide an acceptable level of service (targeting 30 minute headway or better where the service improvement meets the productivity target).
6. **Provide Direct Connections between Major Origins and Destination:** Enhancing system connectivity was a key message heard from customers. Routes that connect two or more destinations also encourage more two-way ridership which will enhance overall productivity and minimize crowding. Routes were assessed to identify connection opportunities outside of the

downtown. Particular emphasis was paid to connections to post-secondary institutions and future Transit Villages that may have a Rapid Transit connection.

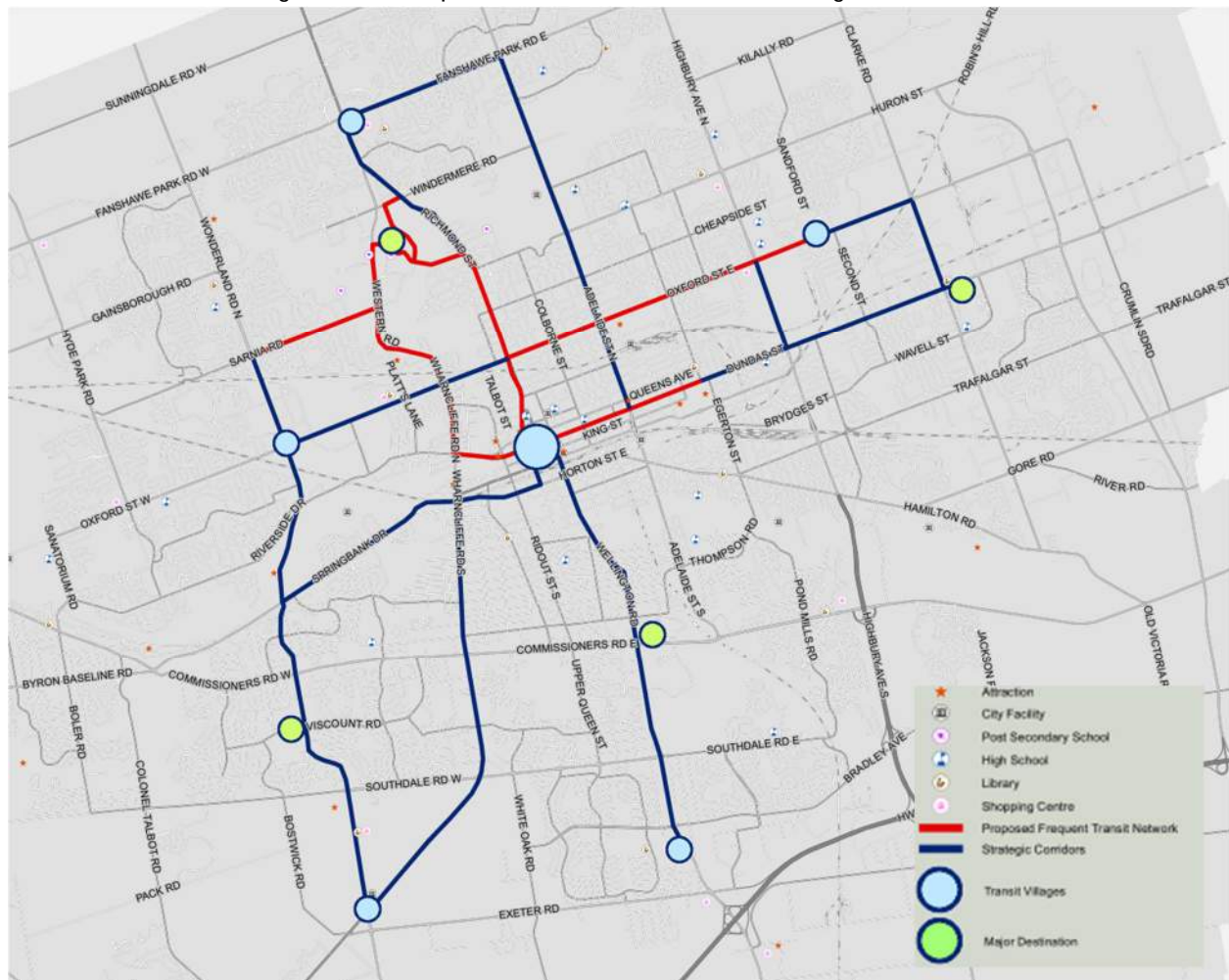
7. **Minimize Impacts on Existing Passengers:** Change is always difficult and can have an impact on existing passengers. Where route modifications or service level changes were proposed, care was taken to reduce the number of passengers negatively impacted by the change.
8. **Enhance Overall Service Levels with a Focus on a Frequent Transit Network and Strategic Corridors:** The transit mode share target identified in the City of London's Transportation Master Plan identifies a need to significantly grow transit ridership over the next 20 plus years. To attract new customers and respond to growing population and employment in the City, enhancements to the transit system are required to capture a larger share of transportation demand. A Frequent Transit Network was identified based on the existing demand along each of the transit corridors. A Frequent Transit Network is defined as the portion of the network on which service is operated at a frequency that eliminates the need for passengers to plan their trips around a published timetable. In addition, existing planning objectives were reviewed to identify other Strategic Corridors that would complement the Frequent Transit Network. Strategic Corridors were identified as corridors that connect to major destinations and/or future Transit Villages as identified in the London Plan and/or are designated as Rapid Transit or Urban Corridors in the London Plan (with a focus on transit supportive land use and intensification). These corridors received considerable focus in the recommendations developed under the five-year plan. The Frequent Transit Network and Strategic Corridors are illustrated in Figure E1.

#### Part 1 - Recommended Five-Year Network Plan: Without Rapid Transit

Part 1 of the study involved the development of a five year service plan which assumed no Rapid Transit network would be in place over the next five years. The focus of the Five-Year Service Plan was to address immediate concerns identified by customers, transit staff and community stakeholders and identify opportunities to enhance service today and continue to grow ridership and enhance the customer experience.

The recommended five year service plan builds on the existing base arterial network. These routes provide direct connections to major destinations and future Transit Villages on routes that provide high frequency service. The majority of base arterial routes form part of the Frequent Transit Network and Strategic Corridors identified in Section 7.1.

Figure E1 – Frequent Transit Network and Strategic Corridors



One of the primary objectives of the service plan was to identify opportunities to better utilize existing resources and reinvest underutilized service hours back into the system. There were three types of service improvements that were made to accomplish this objective.

- Underperforming routes which do not meet the proposed service standards were assessed and recommendations made to grow ridership or reduce the level of service provided.
- Routes that provide duplicate service were also assessed to identify opportunities to better utilize existing resources.
- Passenger load profiles were examined on existing routes to determine if too much service was being provided along certain segments of each route.

The overall service adjustments described above resulted in an overall savings of 43,950 annual revenue service hours and 12 peak buses.

Direction provided by the London Transit Commission 2015-2018 Business Plan indicated that approximately 17,700 new annual revenue service hours should be invested into the system each year

over the five year period. These new service hours, along with the 43,950 service hours saved from the route restructuring exercise, were invested into the system over a five year period. The objectives of the transit service investments were to:

- Improve connectivity to major destinations and Transit Villages, including potential connections to the proposed Rapid Transit network;
- Address real and perceived crowding issues on busy routes;
- Increase service levels on branch routes, to ensure each branch maintains an adequate level of service;
- Enhance service levels on the Frequent Transit Network and Strategic Corridors, particularly areas that may have a future connection to Rapid Transit; and
- Improve off-peak service levels, particularly where service operates at a 60 minute headway or not at all.

Route modifications and service level improvements were phased in over a five year period and are included in Tables 28 to 32 of the report. The proposed 2019 Transit Network is illustrated in Figure E2.

## Part 2 - Recommended Service Strategy with Rapid Transit in Place

Part 2 of this study involved the development of a service strategy that includes Rapid Transit. This network builds on the 2019 network recommended in Part 1 as a base (route structure/headway, ridership and service hours). The objective was to ensure that the 2019 transit route structure takes into account a future which includes Rapid Transit in London. Strategic modifications are recommended to the 2019 network to better connect local transit services to the conceptual Rapid Transit network and avoid duplication of services where existing London Transit routes operate on the same corridor.

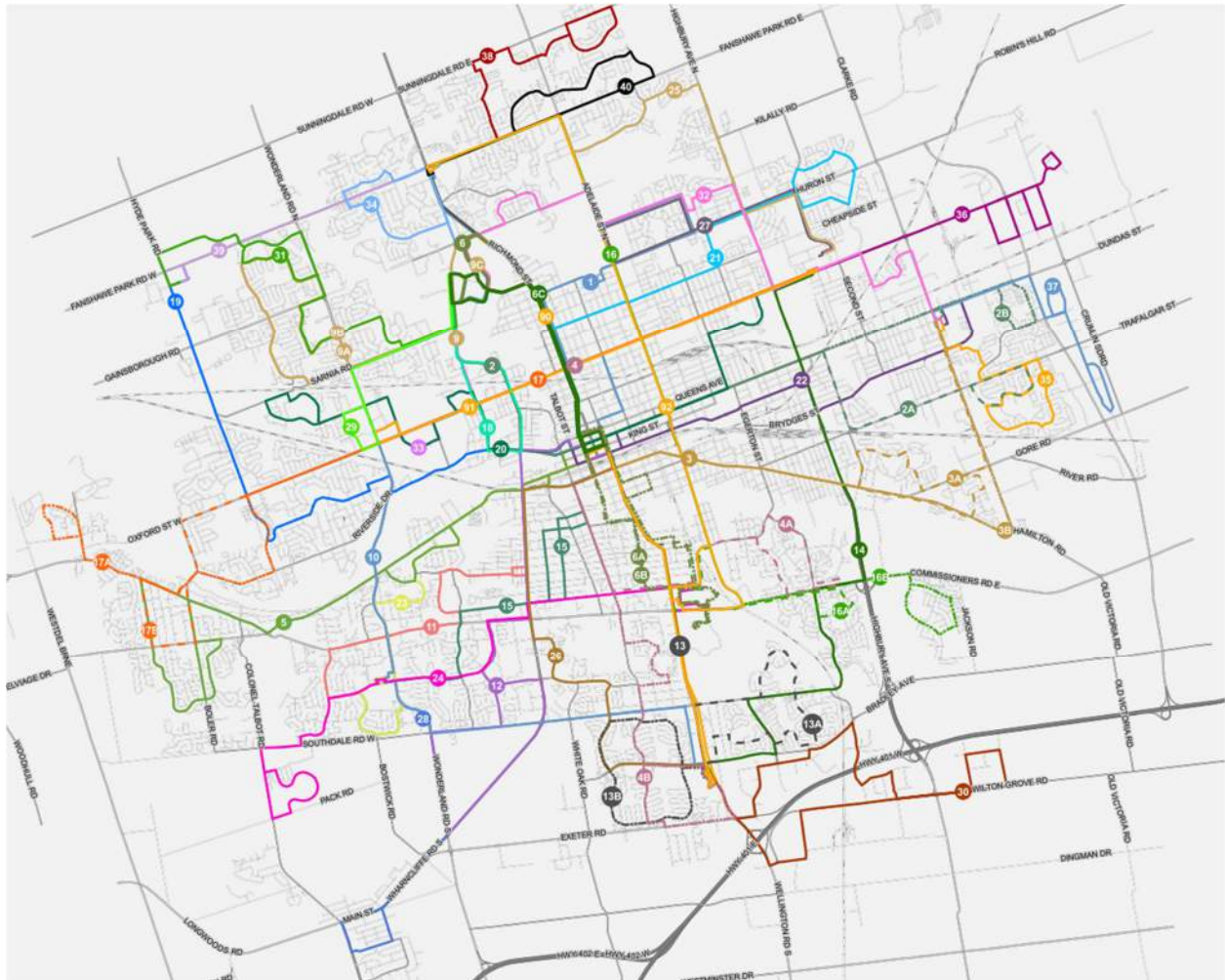
Service level improvements under the Rapid Transit network plan were identified to enhance service levels on routes that connect to the Rapid Transit corridors. The purpose of the improvements is to provide timely connections to the Rapid Transit and build ridership. With the future implementation of Rapid Transit, priority should be given to weekday peak period services, providing a minimum 20 minute service on the majority of routes that connect to Rapid Transit corridors. Weekday evening and weekend service should also be improved where appropriate to ensure the Rapid Transit corridors are also successful during these time periods.

Based on a preliminary strategic review of the 2019 network, it was estimated that the introduction of Rapid Transit would require an increase in 5,000 to 16,000 annual revenue service hours. This does not include the hours required to operate the Rapid Transit network.

The details of Part 2 will be confirmed once the City has completed the first stage of the Rapid Transit Corridors Environmental Assessment (EA). It is anticipated that this will be completed in Fall 2015.



Figure E2 – Recommended 2019 Transit Network



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## TABLE OF CONTENTS

1.0	INTRODUCTION .....	1
2.0	POLICY CONTEXT .....	3
2.1	Provincial Policy Statement .....	3
2.2	Growth Plan for the Greater Golden Horseshoe .....	4
2.3	The London Plan .....	4
2.4	2030 Transportation Master Plan: SmartMoves .....	6
2.5	Bus Rapid Transit - Business Case .....	8
2.6	Rapid Transit Plan .....	9
3.0	BENCHMARK REVIEW .....	11
3.1	Amount of Service .....	11
3.2	Service Utilization .....	13
3.3	Financial Performance .....	14
4.0	ISSUES / OPPORTUNITIES IDENTIFIED THROUGH CONSULTATION .....	15
4.1	Notification/Web Page .....	15
4.2	Stakeholders .....	15
4.3	On-Line Survey .....	15
4.4	Public Drop-In Centres .....	16
4.5	Summary of What We Heard .....	16
5.0	SERVICE STANDARDS .....	19
5.1	Background .....	19
5.2	Route Classifications .....	19
5.3	Service Design Standards .....	22
5.4	Service Performance Standards .....	29
5.5	System Wide Measures of Success .....	39
6.0	REVIEW OF EXISTING NETWORK .....	41
6.1	Route Structure .....	41
6.2	Coverage/Proximity to Transit Services .....	43
6.3	Span of Services .....	43
6.4	Origins/Destinations .....	45

6.5	Network Level Ridership and Performance.....	48
6.6	Route Level Productivity.....	49
6.7	Passenger Load Profiles.....	52
6.8	Passenger Crowding.....	55
6.9	Stop Activity.....	56
6.10	On-Time Performance.....	59
6.11	Stop Density Analysis .....	60
7.0	RECOMMENDED PART 1 FIVE-YEAR NETWORK PLAN: WITHOUT RAPID TRANSIT.....	63
7.1	Guiding Principles and Objectives.....	63
7.2	Network Design Approach.....	67
7.3	Recommended Route Alignments .....	73
7.4	Weekday Peak Period Service Level Improvements .....	104
7.5	Weekday Evening and Weekend Service Level Improvements .....	110
7.6	Service Span Improvements .....	119
7.7	Summary of Service Level Improvements .....	121
7.8	Five-Year Service Phasing Plan (2015-2019).....	124
7.9	Summary and Next Steps .....	132

## Appendix

Appendix A: Summary of On-line Survey Results

Appendix B: Summary of Public Drop-In Centre #2 Comments



## List of Tables

Table 1 – Summary of BRT Scenario Service Assumptions .....	8
Table 2 – Amount of Service .....	12
Table 3 – Service Utilization.....	13
Table 4 – Financial Performance .....	14
Table 5 – Summary of Consultation Feedback.....	17
Table 6 – Stop Spacing in Metres .....	24
Table 7 – Rapid Transit Routes - Minimum Service Levels .....	27
Table 8 – Base Arterial Routes - Minimum Service Levels.....	28
Table 9 – Minor Arterial and Local Routes - Minimum Service Levels .....	28
Table 10 – Passenger Comfort Standards (Maximum Passenger Loads) .....	31
Table 11 – Daily Service Productivity Targets – Boardings per Revenue Vehicle Hour .....	34
Table 12 – System Wide Measures of Success.....	40
Table 13 – Proposed Route Classifications for Existing Routes.....	41
Table 14 – Service Span Analysis.....	43
Table 15 – Trends in Ridership, Service Hours and Financial Performance.....	48
Table 16 – Proposed London Transit Route Productivity Targets.....	50
Table 17 – Potential Crowding Issues by Route (PM Peak Load Profile) .....	55
Table 18 – Stop Density Assessment .....	61
Table 19 – Service Levels and Ridership by Day of Week.....	65
Table 20 – Maximum Service Hour and Capital Bus Purchase Expansion by Year.....	66
Table 21 – Modified Radial Network and Grid Based Network Comparison.....	69
Table 22 – Weekday Peak and Base Service Frequency Improvements .....	106
Table 23 – Weekday Evening Service Level Improvements.....	111
Table 24 – Saturday Service Level Improvements.....	113
Table 25 – Sunday / Holiday Service Level Improvements .....	116
Table 26 – Average Service Span for London Transit’s Peer Group .....	119
Table 27 – Recommended Service Span Improvements .....	121
Table 28 – Proposed 2015 Route and Service Modifications .....	124
Table 29 – Proposed 2016 Route and Service Level Modifications.....	125
Table 30 – Proposed 2017 Route and Service Level Modifications.....	129
Table 31 – Proposed 2018 Route and Service Level Modifications.....	130
Table 32 – Proposed 2019 Route and Service Level Modifications.....	131

## List of Figures

Figure 1 – Proposed City Structure.....	5
Figure 2 – Recommended Bus Rapid Transit Network.....	6
Figure 3 – Key Supporting Transit Routes.....	7
Figure 4 – Existing Transit Route Structure.....	42
Figure 5 – Existing Proximity to Transit Service (weekday peak and base periods).....	44
Figure 6 – Existing 2009 AM Peak Model Travel Demand (All Trips) .....	46
Figure 7 – Future 2030 AM Peak Model Travel Demand (All Trips) .....	47
Figure 8 – Trends in Ridership and Service Hours .....	49
Figure 9 – Average 2014 Weekday Peak Boardings per Revenue Vehicle Hour .....	50
Figure 10 – Average 2014 Weekday Evening Boardings per Revenue Vehicle Hour .....	51
Figure 11 – Average 2014 Saturday Boardings per Revenue Vehicle Hour .....	51
Figure 12 – Average 2014 Sunday Boardings per Revenue Vehicle Hour .....	52
Figure 13 – Existing 2014 All Day Load Profile .....	53
Figure 14 – Existing 2014 Route 2 Load Profile.....	54
Figure 15 – All Day Stop Activity on Weekdays (Fall 2014).....	57
Figure 16 – Route 16 Adelaide 2014 Stop Activity .....	58
Figure 17 – London Transit Fall 2014 Schedule On-Time Performance Sample .....	59
Figure 18 – Frequent Transit Network and Strategic Corridors.....	68
Figure 19 – Proposed Strategic Grid Route Structure .....	71
Figure 20 – Proposed Strategic Radial Route Structure .....	72
Figure 21 – 2019 Recommended Route Structure Plan .....	75
Figure 22 – Recommended Route 24 and 28 Modification.....	77
Figure 23 – Recommended Route 2A/B/C Modification .....	81
Figure 24 – Recommended Route 22/Route 7 Modifications .....	82
Figure 25 – Recommended Route 17/Route 8 Modifications .....	84
Figure 26 – Recommended Route 3 Modification .....	86
Figure 27 – Recommended Route 32/Route 14 Modifications .....	89
Figure 28 – Recommended Route 25 Modification and New Route 40.....	91
Figure 29 – Recommended Route 31 Modification .....	92
Figure 30 – Recommended Route 10 Modification .....	94
Figure 31 – Recommended Route 1/Route 6 Modifications .....	96
Figure 32 – Recommended Route 4/Route 26/Route 13 Modifications.....	99
Figure 33 – Recommended Route 16 Modification .....	101
Figure 34 – Recommended Route 34 Modification .....	102
Figure 35 – Recommended Route 92 Express Route .....	104
Figure 36 – Proposed Part 1 2019 Frequency (Weekday) .....	122

## 1.0 INTRODUCTION

Conventional transit services have been in operation in London since 1875 in various forms. The service began its operations using horse drawn cars along Dundas Street between Ridout and Adelaide. Over the years, the service has gone through many changes. Today, the London Transit Commission (LTC) operates over 30 routes, providing service seven days a week. Public transit has become a vital service providing mobility to the City's residents. Transit ridership in London has grown by over 90 percent from 12.4 million in 1996 to 25.5 million in 2014. According to the London Plan, ridership is projected to grow to 33 million riders by 2024.

Dillon Consulting Limited (Dillon) was retained by the LTC to complete a Route Structure and Service Guideline Review to identify opportunities for improvements to the existing structure. The purpose of the study is to assess the quality and performance of existing bus routes and services and to develop a service plan that improves the customer experience, increases service reliability, reduces overcrowding on buses and provides convenient connections. Service and performance guidelines were also developed to assist LTC staff and Commission with making decisions regarding changes to services.

The study received considerable input and direction from a Project Steering Committee. The Committee consisted of several staff members from London Transit and the City of London. The individuals on the Project Steering Committee were:

- LTC General Manager
- LTC Director of Transportation & Planning
- LTC Manager of Service Administration
- LTC Manager of Planning Services
- LTC Transit Planning Technician
- City of London Director of Roads and Transportation
- City of London Manager of Policy Planning and Programs

Dillon worked with the Steering Committee to evaluate the current service (route structure, frequency, and hours of operation) and to identify a preferred transit service network to meet the service quality expectations of London Transit users within available budgets. Network options were developed for two scenarios:

- Part 1 – Addresses immediate issues and opportunities over the next five years and builds towards a potential Rapid Transit solution.
- Part 2 – Builds on the Part 1 Network and assumes Rapid Transit is in place.

For each scenario, various options were assessed and a preferred network was chosen. For Part 1, a detailed implementation plan was developed to stage the proposed changes and enhancements over a five year period.

Part 2 was strategically assessed and assumed all of the recommendations in Part 1 were in place. The details of Part 2 will be confirmed once the City has completed the first stage of the Rapid Transit Corridors Environmental Assessment (EA). It is anticipated that this will be completed in Fall 2015.

In addition to the Part 1 and Part 2 network service recommendations, a new Service Guidelines document was developed. The document provides London Transit with an important planning and decision making tool to design services, measure performance and quality and provide transparency in the decision making process. Service design criteria and performance measures have been outlined in the document.



## 2.0 POLICY CONTEXT

Successful transit systems are designed to meet broader objectives related to quality of life, economic development and environmental preservation and a community that is engaged, balanced and connected.

Before establishing a new route structure or implementing new service guidelines, it is important to understand the context in which the City is positioned and how London Transit can help achieve broader provincial, regional and municipal goals and objectives. Several reports, policy documents and new legislation that will impact London Transit were assessed. The following section provides a summary of these items.

### 2.1 Provincial Policy Statement

The Provincial Policy Statement was updated in 2014. This document guides all planning related activities in Ontario and establishes the principles of “good planning”. Transit has a major role to play in achieving the policies contained within these statements. Some of the relevant provincial policies are outlined below as well as the role of transit in satisfying these policies:

- “1.1 Managing and directing land use to achieve efficient and resilient development and land use patterns” – public transit supports and is supported by compact and dense development;
- “1.6.7.1 Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs” – one well utilized transit bus can replace as many as 50 cars on the road;
- “1.6.7.3 As part of a multimodal transportation system, connectivity within and among transportation systems and modes should be maintained and, where possible, improved including connections which cross jurisdictional boundaries” – service and fare integration between transit systems allows passengers to cross municipal boundaries seamlessly;
- “1.6.7.4 A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation” – planning for future transit corridors can help create and direct growth to strategic locations ensuring affordable and sustainable growth; and
- “1.6.7.5 Transportation and land use considerations shall be integrated at all stages of the planning process” – transit supports land use planning goals of mixed use compact development. Mobility Hubs involving integrated transit systems and supportive land use are key to achieving intensification targets.

These guiding planning statements from the province reflect the importance of creating communities that can support effective transit systems and pedestrian environments. London has operationalized these principles through its Official Plan and TMP policies. The long-term strategic plan for London Transit must recognize the land-use and transit connection in supporting effective growth.

## 2.2 Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe (also referred to as “Places to Grow”) provides a provincial policy framework to direct and manage growth and to build stronger, prosperous communities. “Places to Grow” provides a broad twenty-five year land use vision for the communities in Ontario’s Greater Golden Horseshoe area (a sub-region of Southern Ontario which lies at the western end of Lake Ontario). The vision is one of compact settlement and development patterns that are capable of providing diverse opportunities to work, to live and participate in community life. Under the “Places to Grow” policies, the majority of the new growth is expected to be accommodated in existing urban areas, with a specific focus on directing growth to strategically located intensification areas.

This legislation and policy direction sets an important precedent for London and other major Ontario cities not covered by the Growth Plan. While the City must develop its own distinct growth management strategy, the Places to Grow Growth Plan suggests some effective strategies. Strategies such as encouraging growth to locations where it supports transit ridership, walking, and biking or locating key destinations in places where they can be served by transit are strategic directions that have been incorporated into City of London policy documents.

## 2.3 The London Plan

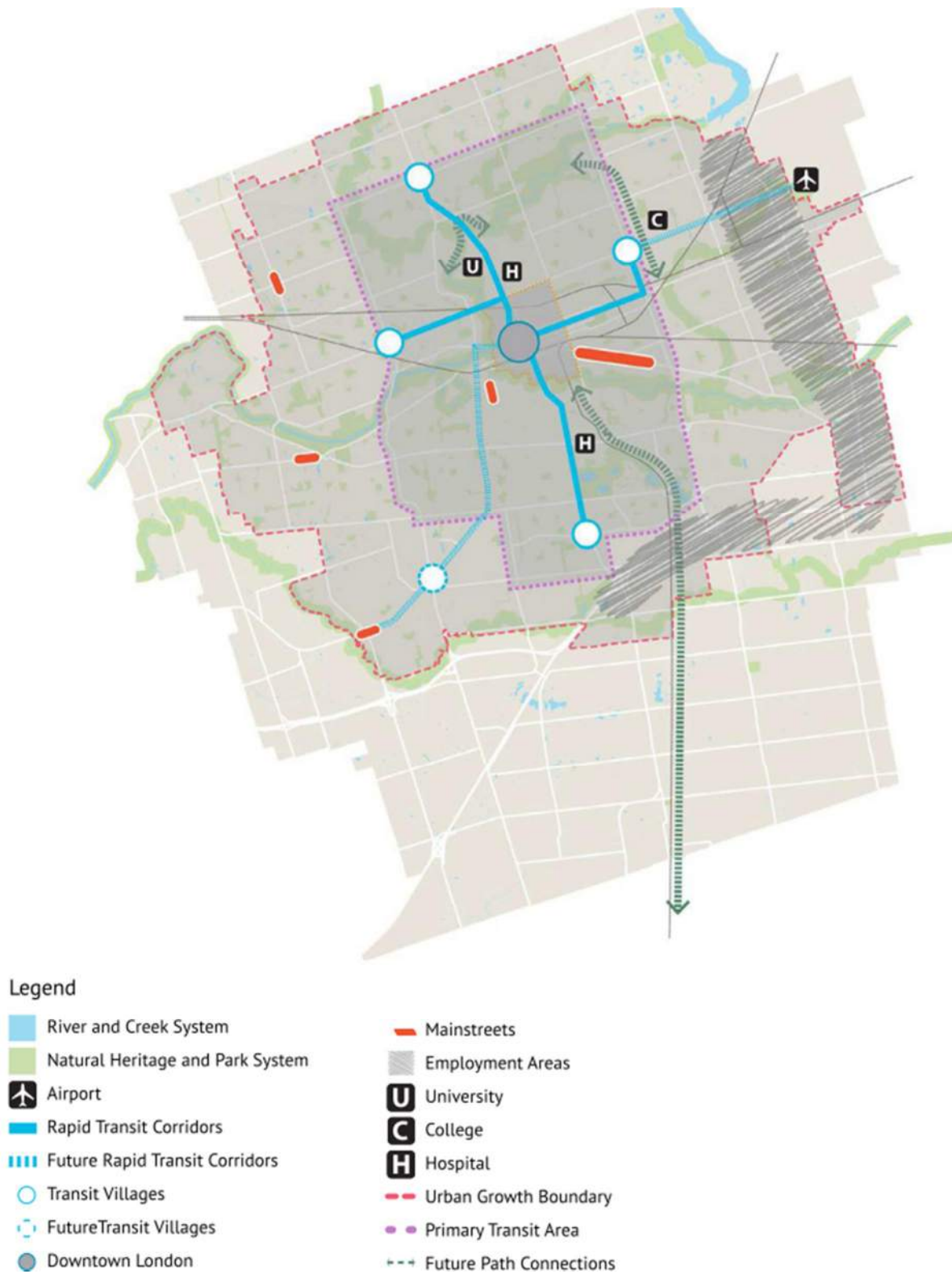
In 2014, the City of London developed a new Official Plan called the London Plan which sets new goals and priorities to shape the growth over the next 20 years. The City is projected to grow by 77,000 people to a population of 458,000 and generate 43,000 net new jobs by 2035. The London Plan sets the framework for addressing issues such as: managing the cost of growth, recognizing a change in demographics, the importance of transportation, the changing economy, protecting farmland, climate change and how to shape the city for prosperity.

The consultation process demonstrated the importance of transportation as a critical issue that must be addressed. The plan outlines a number of strategic directions that intend to guide planning and development over the next 20 years. A number of these directions are related to improving mobility for residents and encouraging investment in transit and active mobility infrastructure.

The City structure plan identifies five major centres that include the Downtown and Transit Villages. All of these centres are intended to allow for intense, mixed-use neighbourhoods and business areas with centrally located Rapid Transit Stations. These centres will also be planned with a high degree of pedestrian amenity making them great places to live, shop, work and play.

Rapid transit corridors have also been identified. These corridors are planned to be vibrant, mixed-use, mid-rise communities that border the length of the rapid transit services. These corridors will act as connectors between the Downtown and the Transit Villages. They are planned for intensification over the life of the plan in order to be able to support higher order transit in the future. It is anticipated that these corridors will support mid-rise residential and mixed development. Figure 1 displays the proposed City Structure.

Figure 1 – Proposed City Structure



(Source: The London Plan)

Figure 1 also denotes the Primary Transit Area. This area will be the focus of residential intensification and transit investment within the City. Intensification will be directed to appropriate locations within the Primary Transit Area and will be developed to be sensitive to, and a good fit within, existing neighbourhoods. This area will also have a heightened level of pedestrian and cycling infrastructure to service and support active mobility and strong connections within these urban neighbourhoods.

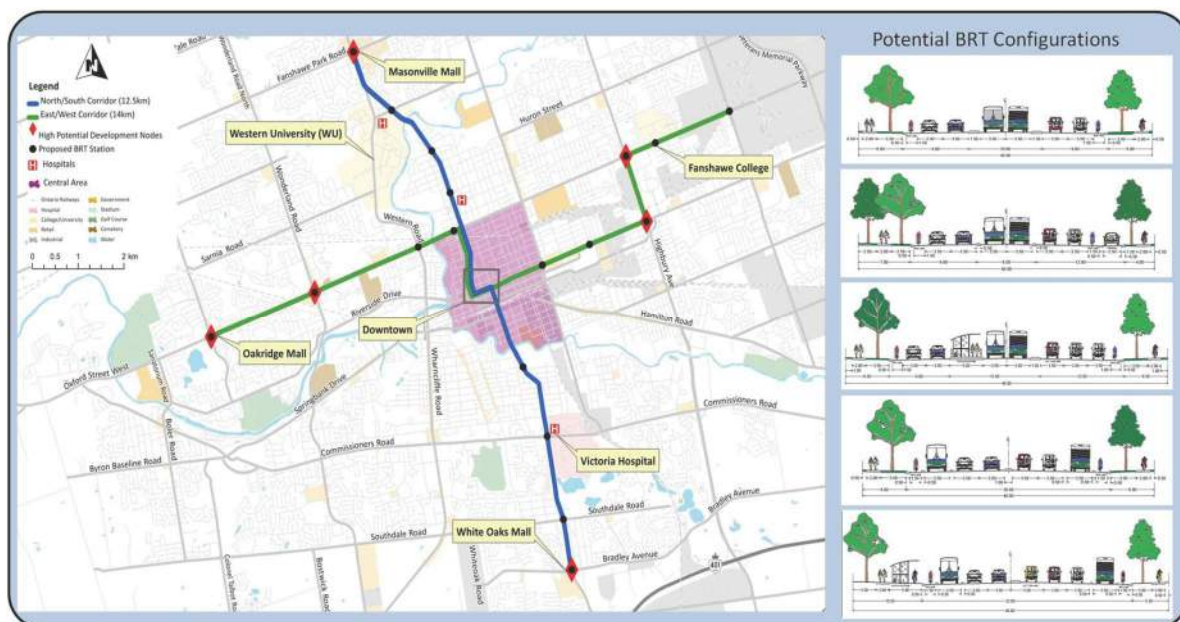
## 2.4 2030 Transportation Master Plan: SmartMoves

The 2030 Transportation Master Plan (TMP) is a long-term transportation strategy for the City that will help guide the City's transportation and land use decisions. The TMP is focused on improving mobility for residents by providing viable choices through all modes of travel. During the development of the TMP, a completed household travel survey revealed that transit is carrying a large share of daily and peak period trips. The mode share of transit travel is currently 12.5 percent of all weekday PM peak period trips, which exceeds the 10 percent target established in the 2004 TMP.

The goal of the 2030 TMP is to provide more attractive travel choices for those who live, work and play in the City. Significant improvements in transit service will be required as well as greater support for walking, cycling, and carpooling. The 2030 TMP has a target transit mode share of 20 percent for all weekday PM peak period trips for the City by 2030.

At the heart of the new TMP is a Rapid Transit network using Bus Rapid Transit (BRT) technology. The proposed network consists of a north/south corridor along Richmond Street / Wellington Road and an east/west corridor along Dundas Street / Oxford Street, both serving the downtown area and broader central area. Figure 2 shows the BRT network recommended in the TMP.

Figure 2 – Recommended Bus Rapid Transit Network

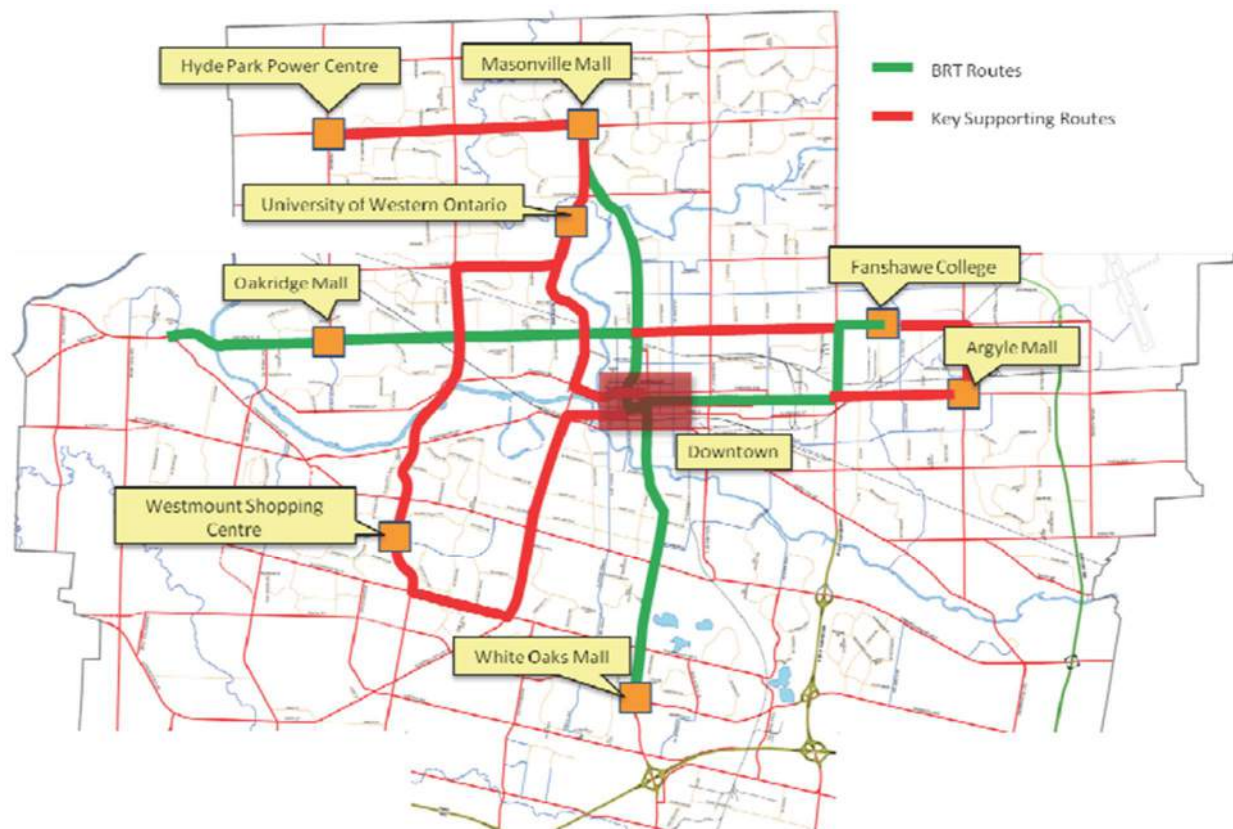


(Source: 2030 Transportation Master Plan)



In addition to the BRT corridors, many other transit improvements will be required to boost transit ridership. This includes more frequent service on all main routes, restructured routes to feed the BRT services and generally making transit easier for riders through broader use of technology, more fare options, and expanded use of real-time information. The TMP identifies key supporting transit routes that should be considered for enhanced service to support the BRT corridors and improve transit ridership across the City (See Figure 3).

Figure 3 – Key Supporting Transit Routes



(Source: 2030 Transportation Master Plan)

The TMP also recommends that the City reshape its current pattern of growth, focusing population and employment growth (via intensification) into the central London area focusing on the downtown and along the proposed rapid transit corridors.

The technology (bus rapid transit versus light rail transit) and corridor alignment recommended in the TMP are currently being evaluated by the City of London as part of its Rapid Transit Environmental Assessment (see Section 2.6).

## 2.5 Bus Rapid Transit - Business Case

As a result of the new TMP, the City of London has placed a heavy emphasis on the important link between land use plans and transportation plans. The TMP calls for the implementation of a nodes and corridors strategy for public transit employing a BRT platform. In July of 2013, the City of London completed a broad-based assessment of the benefits and costs of a new BRT service and enhancements in association with transit services.

The study applied a multiple account evaluation approach (MAE) to examine the costs and benefits of the BRT strategy relative to a base case scenario in both quantitative and qualitative terms. The base case scenario represented a continuation of the transportation strategy that has led to the current configuration of the public transit and roads network in London. Under this scenario, it was assumed the London transit network would continue to operate as a local bus network as much as it does today, but with a continued “business-as-usual” increase in bus fleet size in order to address continued ridership and network growth.

The BRT Scenario represents a transformation of the London Transit network. This scenario included the introduction of BRT services along two corridors as well as enhanced local feeder services to support BRT ridership. Figure 2 above displays the assumed routing and stops along the two corridors.

To undertake the analysis, the two BRT corridors were overlaid as two new routes on the existing transit network. No changes were made to the routing of the existing local bus routes. However, the headways on all of the local routes were improved to either 15 minutes or 20 minutes. This enhanced service was added during the weekday peak periods (2 hours in the AM, 4 hours in the PM) only.

It was assumed the BRT routes would be operated with articulated buses with an assumed capacity of 110 persons per vehicle. The BRT network would operate seven days per week. Weekday peak service would be either every four minutes (Dundas-Oxford) or every five minutes (Wellington-Richmond). Base weekday service would be every ten minutes. The minimum level of service to be provided was planned at a bus every 20 minutes. Table 1 summarizes the service assumptions and requirements.

Table 1 – Summary of BRT Scenario Service Assumptions

Criteria	Wellington – Richmond BRT (North–South)	Dundas – Oxford BRT (East–West)	Enhanced Feeder Service
Headway	5 min	4 min	15 to 20 min
Capacity (pphpd)	1,320	1,540	165 to 220
Buses (including spares)	14	23	48
Travel Time (roundtrip)	53 min (including 5 min layover)	66 min (including 6 min layover)	Varies
Additional Hours of Service (per year)	92,000 (combined)		60,000

Note: pphpd = Persons per hour per direction.

(Source: London Bus Rapid Transit Strategy Business Case)

## 2.6 Rapid Transit Plan

The City is currently in the process of undertaking a Rapid Transit Corridors Environmental Assessment (EA), the study is also being referred to as “Shift”. Shift is an important initiative for transportation for London. It focuses on Rapid Transit as part – along with cars, bikes and pedestrians – of the transportation system that will help the city grow and prosper.

Shift will define where Rapid Transit will go, what it will look like, and how it will be implemented. The project starts with an Environmental Assessment (EA) – a public process that provides all citizens with an opportunity to have input in planning and designing a rapid transit network.

The first stage of Shift will be completed by Fall 2015. This stage will assess:

- the need for Rapid Transit;
- the problems that rapid transit can help solve such as congestion, over-crowded buses, the high cost of driving;
- which streets are suitable for Rapid Transit and how streets can be designed to improve mobility for everyone no matter how they travel; and
- the form of Rapid Transit, including vehicle type (bus, rail or a hybrid), the alignment and technologies.

The second part of the study, to be completed by Summer 2016 will:

- develop a detailed design for the preferred Rapid Transit routes; and
- provide a plan to build the rapid transit network including how it will be funded.

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## 3.0 BENCHMARK REVIEW

A comparison of London Transit's performance with a peer group (municipalities of similar size with comparable transit systems) was conducted. London Transit staff provided guidance on communities London regularly uses for such comparisons. Table 2, Table 3 and Table 4 outline key performance measures for London Transit and four other Ontario transit systems, as well as all Ontario systems with a population between 400,000 and 2,00,000 (with the exception of Ottawa and Toronto) extracted from the 2013 CUTA Canadian Transit Fact Book.

The information presented suggests some general conclusions regarding the amount of service, transit utilization, and financial performance which are outlined below. Each municipality is unique and there are many factors which account for the differences noted below. The presence of large enrollment in post-secondary institutions for which transit systems have arranged U-Passes, is a major factor in understanding the data.

### 3.1 Amount of Service

Table 2 provides a review of system characteristics in the peer group, including service hours and frequency. The amount of service provided is measured by service hours per capita. In 2013, London Transit ranked in the low end in amount of service provided with:

- An average service frequency;
- The second lowest number of active buses;
- Second lowest in revenue vehicle hours;
- Average revenue service hours/capita; and
- Begins Sunday service later than all other systems.

Table 2 – Amount of Service

Transit System	Service Area Population	Frequency	Service Hours	Total Active Buses	Revenue Vehicle Hours/ Capita	Revenue Vehicle Hours
Brampton	547,760	10-15 minutes (ZÜM Routes)	Monday-Friday 4:00-2:00	327 (311 Accessible)	1.64	898,160
		15-30 minutes (Core Routes)	Saturday 4:30-2:00			
		30-45 minutes (Local Routes)	Sunday/Holidays 6:30-1:00			
Hamilton	487,000	30 minutes (Mon-Sat)	Monday-Saturday 5:00-2:00	221 (221 Accessible)	1.46	710,541
		60 minutes (Sun/Holidays)	Sunday/Holidays 6:00-1:00			
London	373,730	10-60 minutes	Monday-Saturday 6:00-12:00	192 (192 Accessible)	1.50	559,518
			Sunday/Holidays 9:00-11:00			
Ontario Systems Group 2-3	462,476	N/A	N/A	201 (196 Accessible)	1.26	582,909
Waterloo Region	435,780	15-30 minutes (Express Routes)	Monday-Friday 6:00-12:30	236 (236 Accessible)	1.47	640,620
			Saturday 6:30-12:30			
		30 minutes (Other Routes)	Sunday/Holidays 8:00-12:30			
Windsor	210,891	15-70 minutes (Various Routes)	Monday-Saturday 5:00-2:00	104 (78 Accessible)	1.03	216,708
			Sunday/Holidays 8:00-12:00			
Average	419,606	N/A	N/A	214 (205 Accessible)	1.43	601,409



### 3.2 Service Utilization

Service utilization is a measure of the overall effectiveness of the transit service. It is measured based on revenue passengers per revenue vehicle hour (effectiveness of service) and revenue passengers per capita (market penetration). In 2013, London Transit ranked high in service utilization with:

- The highest regular service passenger trips;
- The highest regular service passengers/revenue vehicle hour; and
- The highest regular service passengers/capita.

London's transit service attracts a high number of passengers per capita when compared to its peers. The City of London has a very large post-secondary enrollment relative to the municipal population and a U-Pass program in place for both Fanshawe College and Western University. The ridership per hour of service provided is highest in the peer group which indicates the services offered are well utilized. A concern remains that the transit service levels (especially frequency) may not be sufficiently attractive to meet the City's mode share target, as schedule adherence and overcrowding complaints have increased over the last few years. Such performance can be expected to result in a decline in ridership if improvements are not made. Table 3 presents a summary of the service utilization for the peer group.

Table 3 – Service Utilization

Transit System	Regular Service Passenger Trips	Regular Service Passengers/Revenue Vehicle Hour	Regular Service Passengers/Capita
Brampton	19,405,803	21.61	35.43
Hamilton	21,817,842	30.71	44.80
London	23,570,746	42.13	63.07
Ontario Systems Group	15,246,306	26.16	32.97
Waterloo Region	22,000,737	34.34	50.49
Windsor	6,438,517	29.71	30.53
Average	18,079,992	29.14	43.09

### 3.3 Financial Performance

In 2013, London Transit was below average among peer municipalities in terms of fares and municipal operating contribution per capita. The revenue to cost ratio which measures the amount that users contribute toward operating cost was the highest in the peer group at 57 percent (see Table 4 below).

While users are paying lower fares for transit in London than in most other municipalities, studies indicate that transit riders are often willing to pay more if service levels can be increased. The low average fare is likely the result of the U-Pass agreements with Fanshawe College and Western University. Approximately 47 percent of London's transit ridership is post-secondary students while only 24 percent of the revenue comes from these users.

The City of London is contributing less per capita to the operation of transit than peer systems, partially due to a healthy R/C ratio and also the lower service hours provided. In order for the transit service to grow to meet expectations of the public and the City's target mode share, the municipality will need to increase the level of investment to be consistent with its peers.

Table 4 – Financial Performance

Transit System	Adult Cash Fare	Average Fare	Municipal Operating Contribution/Capita	Revenue/Cost Ratio
Brampton	\$3.50	\$2.39	\$84.20	47%
Hamilton	\$2.55	\$1.65	\$65.89	50%
London	\$2.75	\$1.34	\$58.50	57%
Ontario Systems Group	\$3.35	\$1.92	\$72.76	44%
Waterloo Region	\$3.00	\$1.32	\$79.18	41%
Windsor	\$2.50	\$1.78	\$60.71	44%
Average	\$2.93	\$1.69	\$71.91	47%

## 4.0 ISSUES / OPPORTUNITIES IDENTIFIED THROUGH CONSULTATION

A number of consultation activities were held throughout the duration of the study. The following sections detail the feedback received throughout the consultation activities.

### 4.1 Notification/Web Page

Several public information activities were conducted to ensure maximum opportunity for public participation in the process.

At the beginning of the study (July 2014), a study notification was made available to the public as well as being sent out by email to various stakeholders and municipal staff. Ads were posted on transit vehicles and a study web site was developed and used to communicate information and receive comments. The study website was linked to London Transit Commission's website at: <http://www.ltconline.ca>. A number of comments were received throughout the study process.

### 4.2 Stakeholders

Stakeholder consultations were conducted throughout the study. The stakeholder consultation format consisted of focused, one-on-one discussions with individuals or small groups comprising representatives of various stakeholders in London. These discussions covered the existing operation of London Transit, suggestions for improvement and the identification of issues and opportunities to be addressed in the study. Representatives from the following stakeholders were consulted during this phase of the study:

- Argyle Community Association
- Cycling Advisory Committee
- Downtown BIA
- Emerging Leaders Committee
- Fanshawe College
- Glen Cairn Community Resource Centre
- London Accessibility Advisory Committee
- London Cycling Club
- London Development Planning
- London Economic Development Corporation
- London Transit Accessibility Advisory Committee
- London Transit Operations Committee
- London Transportation Advisory Committee
- London Youth Advisory Council
- Masonville Mall
- Orchard Park Sherwood Forest Ratepayers
- Seniors Community Association
- Western University
- White Oaks Mall

### 4.3 On-Line Survey

An online survey for transit users and non-users was available via the LTC website from July 10<sup>th</sup> until November 15<sup>th</sup>, 2014 to gather information on what influences existing travel choices, trip making habits as well as opinions about current London Transit services and suggestions for the future.

The online survey yielded 3,363 complete responses that were used to inform the study. The results of the survey are summarized in Appendix A.

#### 4.4 Public Drop-In Centres

Two public drop-in centres were held throughout the course of the study. Both were well advertised to encourage study participation. Notifications were posted on transit vehicles and the study website prior to each event. Advertisements were included in local newspapers and radio stations. Email notifications were also sent to stakeholders, Commission members, members of Council and the study contact list.

The first drop-in centre was held at the London Public Library on July 17<sup>th</sup>, 2014 between 2:00pm and 4:00pm and between 6:00pm and 8:00pm. The purpose of the consultation session was to obtain input from both London Transit customers and the general public on the current London Transit service and their priorities for improvements. There were over 100 people in attendance that provided valuable feedback on the existing system and potential directions. Input was used to inform the general vision and objectives for London Transit as well as guide study activities.

A second public drop-in centre was held at Goodwill Industries on April 8<sup>th</sup>, 2015 between 2:00pm and 4:00pm and between 6:00pm and 8:00pm. The purpose of the consultation session was to present the preliminary study recommendations and request the public's feedback. There were approximately 70 people in attendance that provided input to the preliminary recommendations. An electronic copy of the draft report with recommended service modifications was also posted on the study website for people that were unable to attend the drop-in centre. This provided members of the public with an additional opportunity to comment on the preliminary study findings and recommendations. Appendix B presents a summary of the consultation feedback received verbally during the second drop-in centre, through comments sheets and via email. Comments were reviewed and resulted in some adjustments to the recommendations contained in Section 7.0 of this report.

#### 4.5 Summary of What We Heard

The following table (Table 5) presents a summary of the common themes heard throughout the initial consultation activities.

Table 5 – Summary of Consultation Feedback

Theme	Comments
Service Hours	<ul style="list-style-type: none"> <li>• Run extended service hours, later in the evenings, and increased service on weekends and holidays</li> <li>• Provide equivalent services on Saturday and Sunday, with similar start and end times and identical route coverage – no reason Sunday service should be so limited</li> <li>• PM peak service should cease later than it currently does, around 7pm instead of 6pm to accommodate large passenger flows leaving work</li> <li>• Coordinate with key employers and regional destinations such as Masonville Mall to make sure last bus of evening is late enough for employees to go home</li> <li>• Consider running smaller buses during evenings, weekends, and on lower-demand routes</li> <li>• Consider 24-hour service on key routes, with potential of fare premium between 12:00am and 6:00am</li> </ul>
Frequency	<ul style="list-style-type: none"> <li>• Crowding is an issue on many routes, especially during peak hours</li> <li>• Improve service and frequency on key routes</li> <li>• Expand use of and more efficiently allocate articulated buses, especially on routes with crowding issues</li> </ul>
Network Suggestions	<ul style="list-style-type: none"> <li>• Establish a more grid-like system with frequent service on trunk routes</li> <li>• Create a city ring route</li> <li>• Facilitate connections and transfer points at high-density residential and commercial nodes</li> <li>• Simplify route structure, which is confusing with different roads/stops being served at different times of day – make all buses along a certain branch use same roads and service same stops</li> <li>• Establish service in Colonel Talbot Road/ Southdale Road neighbourhood</li> <li>• Improve services north of Fanshawe Park Road</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Improve website to make more user-friendly</li> <li>• Develop mobile application for real-time bus arrivals</li> <li>• Offer WiFi service on bus</li> <li>• Expand use of real-time vehicle arrival information at bus stops</li> <li>• Improve telephone operating service, with quick ability to speak to a real person</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Time transfers more efficiently to minimize waiting times for main passenger flows</li> <li>• Emphasize importance of drivers sticking to schedule; specifically, make sure buses do not run ahead of schedule</li> <li>• Revisit signage standards to ensure clearer destination signs on buses (with main destination and transfer points listed)</li> <li>• Display notifications on exterior destination sign if bus is full</li> </ul>

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## 5.0 SERVICE STANDARDS

### 5.1 Background

Service Standards provide for a consistent and fair evaluation of both existing and proposed services, and establish a framework for guiding decisions on how to best serve customers' diverse travel needs within prevailing budgetary and resource limits. The standards discussed in this document are intended to provide guidelines governing the planning and design of the overall service strategy for the London Transit system. They identify the definitions and details of the standards and how they are used in decision making, to ensure that as much as possible transit services are affordable, fair and equitable to all customers.

These standards are consistent with the Transportation Master Plan 2030 and aligned to the London Transit Business Plan; Long Term Transit Growth Strategy, the London Plan and the overarching goals and objectives of the London Transit system.

Service standards are evolutionary in nature, because markets, customer expectations, and London Transit's resources change over time. Therefore, London Transit must be responsive to these changes in order to retain current customers and achieve and sustain ridership growth. Balancing customer expectations and budget constraints is a difficult challenge. Existing services must be monitored and modified continually to match service levels to demand and respond to opportunities for new or improved services. The dynamic nature of new urban developments and changing travel markets in London Transit's service area requires constant review of new service strategies, service expansion, or service re-alignment options.

Using established Service Standards as a guide, London Transit must be able to rationally evaluate service changes and make adjustments to service within the constraints of budget and resource availability, in order to provide the highest quality service in the most efficient manner possible.

These Service Standards are based on a review of current performance; future service growth; a service standards peer review and directions and input provided by London Transit staff. They should be reviewed and updated, at a minimum of every five years, to ensure that the established criteria; monitoring tools and measurement methods are still relevant to London Transit's operating environment; customer needs and expectations and reflect current transit industry trends.

### 5.2 Route Classifications

Service standards are defined for the different route classifications that form the overall family of services offered by London Transit. The various current and future route classifications are as follows:

- Rapid Transit Routes (Bus Rapid Transit or Light Rail Transit);
- Arterial Routes – non-Rapid Transit;
- Local Routes;
- Industrial Routes;
- Express Routes; and

- Community Bus Routes.

### 5.2.1 Rapid Transit Routes

Rapid Transit routes operate on a limited stop basis and are designed to provide a frequent, high quality service in designated corridors with little or no deviation from these corridors except to access transit villages and/or key destinations. Rapid Transit routes are designed where possible to operate in dedicated transit lanes or exclusive transit rights of way using bus or rail technology. Where the factors such as the right-of-way width do not permit the inclusions of an exclusive transit lane, Rapid Transit routes operate in mixed traffic but are enabled by queue jump lanes and transit signal priority to improve travel time and reliability.

Rapid Transit routes present a system image that is uniquely identifiable by utilizing distinct and specially branded vehicles with intelligent technology systems and upgraded station stops and shelters. They are generally implemented proactively in intensification corridors where transit ridership growth is paramount.

The following criteria are used in identifying potential Rapid Transit corridors:

- Connectivity - To attract riders and compete with the private auto, corridors should connect major trip attractors and generators without requiring transfers. Connectivity should be the primary screening criterion in selecting future Rapid Transit corridors.
- Benefit to Transit - Corridors that have the highest benefit to transit, including the number of bus routes currently served; number of passengers and opportunities for the biggest impact on time saving, etc.
- Response to Growth – Rapid Transit corridors should recognize both short and long-term growth in population and employment. Corridors should be selected to connect intensification corridors and nodes with planned population and employment growth identified in the London Plan. This provides an opportunity to increase ridership and to help influence transit supportive development.
- Delay Reduction - Transit will benefit most from Rapid Transit features in corridors that are congested. Reduced travel time, enabled by transit priority measures, will offer true competition with the private auto.
- Applicability of Corridor - In certain cases physical constraints from existing urban form, heritage buildings, etc. may limit the implementation of some Rapid Transit features. However, this criterion should play a lower significance factor in the overall selection of Rapid Transit corridors due to the flexibility of available transit priority options that do not involve road widening.

The determination and designation of Rapid Transit corridors in London is currently being carried out by the Rapid Transit Environmental Assessment. The assessment is identifying opportunities for a north-south and east-west corridor that will link major transit villages in the City of London.

### 5.2.2 Arterial Routes

The Arterial Route network provides a high standard of service and route coverage to all major destinations within the City of London. These routes travel predominately on major arterial corridors, servicing all stops with minimal deviation, except to provide connections to key destinations, such as downtown London; major shopping malls, educational institutions and or other major transfer locations and destinations. Given the focus on intensified corridors, major employment nodes and population centres, the frequency and span of service on Arterial Routes is generally higher than Local Routes.

Two types of Arterial Routes are identified:

- a.) Base Arterial Route: Designed so that over 70 percent of the route operates on one or more arterial corridors providing direct two-way service connecting two or more transit villages (as defined in the London Plan) and/or major destinations. These routes are typically the highest performing routes in the system and therefore are planned with a high level of service.
- b.) Minor Arterial Route: Designed to provide direct two-way service, operating on a combination of arterial and collector road corridors and connecting one or more transit villages and/or major destinations. These routes typically attract less ridership than Base Arterial Routes and therefore are measured against a lower ridership performance standard.

London Transit operates many routes on arterial corridors which are currently designated as “Mainline Cross-town” or “Downtown Suburban”.

In anticipation of the introduction of Rapid Transit service, designated Base Arterial Routes could also operate in combination with Rapid Transit Routes, providing complete service coverage to all stops on the Rapid Transit corridor.

### 5.2.3 Local Routes

Local Routes form the balance of the fixed route network. They are designed to provide a feeder or neighbourhood circulation function supplementing and connecting to the Rapid Transit and Arterial Route Network; local activity centres; schools and transfer points for connections to other services.

Operation on local residential streets should be limited and only considered to serve major passenger destinations where no other options exist; to meet service proximity objectives; or to accommodate operational needs such as a turn-around.

Local Routes are typically measured against a lower performance standard than the Arterial Routes, and generally provide lower levels of service and more limited operating periods, depending on demand and performance.

### 5.2.4 Industrial Routes

Provide service to industrial areas and are generally scheduled to the shift times of the local businesses, with more limited operating periods, depending on demand and performance.

### 5.2.5 Express Routes

Express Routes duplicate a service or services within a specific corridor that services high demand destinations, making limited stops where significant ridership activity takes place at specific nodes. These services are used to increase capacity and enhance the customer experience by reducing the travel time.

Express Routes are primarily implemented on the Arterial Route Network, or as a precursor to Rapid Transit Routes on designated/planned Rapid Transit corridor. Stop spacing along Express Routes should be designed to ensure that 75 percent of the passengers within the corridor have convenient access to the express service and that the express service can be scheduled to save at least 15 percent of the regular route travel time, with a minimum time savings of 10 minutes from end to end.

While providing similar levels of direct express services as Rapid Transit Routes, Express Routes do not have the same characteristics as Rapid Transit Routes, such as minimum service frequencies; service period; advanced technologies and branding. Express Routes are often implemented as a result of high transit demands and/or as precursors to Rapid Transit Routes.

London Transit currently operates two limited stop express routes, which are precursors to the proposed Rapid Transit corridors – Route 90 – Wellington/Richmond corridor and Route 91 - Oxford corridor.

### 5.2.6 Community Routes

Community Routes are fully accessible transit services that can be used by anyone, but are designed primarily for seniors and persons with disabilities who are able to use conventional transit. Rather than follow conventional routing patterns, they are custom designed to provide better access to facilities oriented to this market group, such as seniors' apartments, medical facilities, community centres and shopping centres.

Community Routes are operated dependent on demand and performance and are therefore typically measured against a lower performance standard than local routes and generally provide lower levels of service and more limited operating periods.

## 5.3 Service Design Standards

Service Design Standards present specific criteria for route design and service levels and cover key characteristics such as system proximity, route directness, service frequencies and period of service.

### 5.3.1 System Proximity Standard

Proximity standards are meant to address the accessibility of transit by targeting a maximum walking distance that a customer will have to travel to reach a transit stop. London Transit will attempt to operate routes throughout the established service area so that these standards are met.

The proposed service standards described in this section measure the 'proximity' of transit service to population and employment instead of a focus on "geographic coverage". Proximity takes into account

the density of an area that is serviced by transit as part of the walking distance calculation whereas geographic coverage addresses only the physical area within walking distance of transit service. The Proximity standard therefore provides a more accurate measure of the ability of customers to access transit services.

The proposed objectives for proximity standards as described below distinguish between existing and new development and also provide measures to determine the effectiveness of service:

1. By 2030, 85% of population and employment within the Urban Growth Boundary will be within 400 meters walking distance of a transit stop.
2. 90% of projected population and employment in new development plans will be within 400 meters walking distance of an existing or planned transit stop and 65% of projected population and employment within new development plans will be within 250 meters walking distance of an existing or planned bus stop.<sup>1</sup>
3. 70% of new development city-wide will be within 400 meters walking distance of an existing Rapid Transit, Express Route or Arterial Route bus stop.
4. Maintain or increase annually the number of Passenger Boardings by Roadway Kilometer of Transit Service.

*Note: For 2013 there were 128,944 passenger boardings per roadway kilometre of transit service. This is based on 26.7 million boardings and 207 kilometres of roadway in the London Transit network.*

Currently, 78 percent of population and employment within the Urban Growth Boundary of City of London is within 400 meters walking distance of a transit stop. Meeting the proposed proximity standards will require some modification of existing routes, but more importantly, will require improved coordination with the City of London Planning Department to influence development along existing transit corridors. This will lead to more effective decisions being made on where to focus transit services and stimulate intensification of population and employment.

Therefore, it is recommended that the following process be adopted to guide any actions taken by London Transit to ensure progress to achieving the above service proximity standards.

1. London Transit will focus the implementation and operation of Rapid Transit, Express and Arterial Routes on Rapid Transit Corridors and Urban Corridors, connecting to Transit Villages and the Downtown area identified in the London Plan.
2. London Transit will work with the City of London Planning Department to encourage development and intensification of population and employment within 400 meters walking distance of existing transit stops and stations to move towards the service proximity targets. Where capacity exists, this initiative alone will increase ridership without any corresponding increase in service levels. If service level increases are required to accommodate demand, this

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<sup>1</sup> Note: This will be assessed in the development review process with City of London and London Transit staff working together to assess and approve new development applications.

will benefit both existing and new transit customers and encourage an increase in transit mode share. This should be a primary focus over route and service changes.

3. On an ongoing basis, London Transit will monitor progress toward the service proximity objective to see if intensification is occurring in the right areas and to identify opportunities for new or modified routes as required. Over time, the 78 percent proximity result will increase if most of the population/employment growth is occurring within 400 meters walking distance of existing transit stops.
4. The review of development applications for plans of subdivision and large retail/employment and institutional areas will be subject to these standards in the development review process. New development should be planned around existing or planned bus routes. Any development that is proposed outside of the 400 meter or 250 meter walking distance will require the submission of a transit plan from the developer, to be reviewed by London Transit before being approved. The City of London Planning Department will be responsible for monitoring development approvals annually to ensure that 70 percent of city-wide new development occurs within 400 meters walking distance of an existing Rapid Transit, Express Route and/or Arterial Route bus stop.

Implementation of service expansion to provide proximity coverage is subject to the guidelines for service expansion as set out in Section 5.3.4; the availability of adequate infrastructure for safe and efficient operation and the allocation of required physical and financial resources. As a general policy, priority will be given to moving people closer to transit rather than moving transit closer to people.

### 5.3.2 Bus Stop Placement

Bus stops should be designed in accordance with London Transit's Bus Stop Standards and Technical Guidelines. Bus stops placement should establish a proper balance between the walking distances for customers and the operational efficiencies of well-spaced stops.

To achieve this goal, the following standard is recommended for bus stop placement:

1. Transit stops should be located on public roadways based on the spacing guidelines in Table 6 below. Where significant deadheading occurs due to lack of adjacent development or pedestrian connections, stop spacing may be increased.

Table 6 – Stop Spacing in Metres

Spacing Measure	Rapid Transit / Express Routes	Arterial Routes	Local Routes	Industrial Routes
Minimum (metres)	500	250	200	250
Maximum (metres)	Major destinations	400	400	Major destinations

*\*Downtown is an exception for minimum stop spacing.*



2. Priority of location should be given to transit stop locations at major intersections and near the street entrance of major destinations (avoid mid-block locations where possible). At signalized intersections, far side stop locations will be prioritized to achieve improved operational efficiency.
3. For each stop location, confirm with other City departments (e.g. Planning and Development and Roads and Transportation staff) that there are good pedestrian connections between the stop and trip origins and destinations.

### 5.3.3 Route Directness

Route Directness is a measure of how much a route deviates from the most direct path between the start and end points of a route. The measure indicates a desire to limit additional travel time and distance resulting from route deviations and indirect or circuitous route design. It is measured as the ratio of the length of the proposed route (with deviation) to the length of the route along the most direct road path.

It is important to note that the standard does not measure the deviation between a linear path, but the deviation between two route ends. For example, if a route is designed to travel east-west and then north-south to connect two destinations that are on two perpendicular corridors, the standard would measure the deviation from the most direct east-west path and then the deviation from the most direct north-south path. A route with no deviation from the most direct path would have a route directness factor of 1.0.

**Rapid Transit Routes** - Rapid Transit Routes are designed to operate on major arterial roads, and should not deviate from these arterials, except when necessary to access major transit terminals. A route directness factor of 1.0 should be strictly applied.

**Arterial Routes** - Deviations on Arterial Routes from an arterial/collector road corridor should be avoided, to achieve a route directness measure within a range of 1.0 to 1.3. Minor deviations are permitted to service a major terminal or trip generator; to connect to another route for the purposes of accommodating a major transfer movement; to provide necessary coverage to achieve proximity standard and/or match travel demands. Arterial Routes should ideally be anchored at a terminal or major activity centre, with one way loops permitted at the extremities of the routes to allow for quick turn-around. The maximum travel time around a one-way loop at the extremity of an Arterial Route should not exceed five (5) minutes.

The route directness measure for Base Arterial Routes should be within a range of 1.0 to 1.1

The route directness measure for Minor Arterial Routes should be within a range of 1.0 to 1.3

Split tail or branch portions of Arterial Routes are circuitous in design, similar to local routes. Therefore a route directness factor is not recommended for these branches.

**Local Routes** - Given the circuitous nature of many local roads and the desire to provide more coverage, a route directness factor is not recommended. However, Local Routes should be designed to provide as direct a service as possible, while ensuring proximity targets continue to be met.

**Industrial Routes** - Given the circuitous nature of many roads within the industrial areas, a route directness factor is not recommended.

**Express Routes** - For Express Routes, the route directness measure should be equal to or less than that of the underlying Arterial Route. Within the express or limited stop portion of the route, the route directness measure should be 1.0 to 1.1.

**Community Routes** - For Community Routes, service proximity is generally the primary consideration and the routes are typically somewhat circuitous in order to directly serve higher density residences and community destinations of interest to the seniors market and persons with disabilities. No specific route directness standard for Community Routes is recommended but it is suggested that the total time in the bus for a person making a return trip should not exceed 60 minutes, with 30 minutes preferred.

#### 5.3.4 Transfers

The London Transit system is designed to minimize the amount of travel time and transfers required to reach a final destination. Within the area of contiguous urban development, the system should be designed to limit the number of transfers required to reach each of the defined Transit Villages and major destinations. To achieve this, the route network will be designed so that:

- 100 percent of routes are connected to the downtown by one or less transfers.
- 90 percent of routes are connected to the defined Transit Villages and major destinations by two or less transfers. Transit Villages and major destinations are defined as Western University, Fanshawe College, Masonville Mall, White Oaks Mall and Westhill Centre Plaza (Wonderland and Oxford).

#### 5.3.5 Service Levels

Service levels define the frequency of service and the service period for each route classification. The service period for each service type will determine the availability and convenience of the service for transit customers. Minimum service period targets are applicable for the Rapid Transit, Arterial and Local Routes. Different frequency targets are identified for different service offerings and during different periods. This communicates to the customer the minimum level of service they can expect when riding London Transit.

As a general guideline, clock-face headways should be implemented for any route operating with a scheduled headway greater than 10 minutes. Clock-face headways are an important marketing tool that allows schedule times to repeat each hour, making it easy for the customer to remember the bus schedule and can also aid in improving connections.

It should be emphasized that the service headways recommended below should not be exceeded for the various route classifications.

London Transit is currently experiencing frequent daily occurrences of available service capacity being unable to match service demand. This is resulting in many customer complaints; increased frustration and the real possibility of ridership decline. Therefore, subject to adequate funding and the availability of additional resources, greater frequencies, as required on existing routes, are recommended to match the demand for service.

Rapid Transit Routes - Higher service levels are offered on the Rapid Transit Routes to provide an increased service quality on these corridors and stimulate ridership growth. The minimum service frequency by service period for Rapid Transit routes is outlined in Table 7 below.

Table 7 – Rapid Transit Routes - Minimum Service Levels

Operating Period	Service Period	Maximum Headway
Weekday Early Morning	6:00 am to 7:00 am	10 minutes
Weekday AM Peak	7:00 am to 9:00 am	7.5 minutes
Weekday Base	9:00 am to 2:00 pm	10 minutes
Weekday PM Peak	2:00 pm to 6:00 pm	7.5 minutes
Weekday Early Evening	6:00 pm to 9:00 pm	10 minutes
Weekday Late Evening	9:00 pm to 12:00 am	15 minutes
Saturday Day	8:00 am to 9:00 pm	15 minutes
Saturday Evening	9:00 pm to 12:00 am	20 minutes
Sunday / Holidays	9:00 am to 7:00 pm	15 minutes

Base Arterial Routes - Base Arterial Routes are intended to provide a basic minimum level of service, throughout all time periods to all major destinations in the City of London. The minimum service levels presented in the table below, recommend improved frequencies during most time periods compared to the current service guidelines.

Subject to the availability of resources, higher service frequencies are encouraged on Base Arterial Routes to support the proposed Rapid Transit network and provide an increased service quality along the main arterial corridors. Improved frequencies are currently required to address customer demand for enhanced service levels generally and on weekends in particular.

Table 8 – Base Arterial Routes - Minimum Service Levels

Operating Period	Service Period	Maximum Headway*
Weekday Early Morning	6:00 am to 7:00 am	30 minutes
Weekday AM Peak	7:00 am to 9:00 am	20 minutes
Weekday Base	9:00 am to 2:00 pm	30 minutes
Weekday PM Peak	2:00 pm to 6:00 pm	20 minutes
Weekday Early Evening	6:00 pm to 9:00 pm	30 minutes
Weekday Late Evening	9:00 pm to 12:00 am	30 minutes
Saturday Day	8:00 am to 9:00 pm	30 minutes
Saturday Evening	9:00 pm to 12:00am	30 minutes
Sunday / Holidays	9:00 am to 7:00 pm	30 minutes

*\*NOTE: For split tail or branched routes, the service standard only applies to the core portion of the route*

Minor Arterial and Local Routes - The actual service levels and hours of operation for Minor Arterial and Local Routes are subject to demand and meeting the minimum utilization targets, based on boardings per revenue vehicle-hour (Section 5.4.2). When the operation of these services is warranted by demand, the following minimum service levels should apply:

Table 9 – Minor Arterial and Local Routes - Minimum Service Levels

Operating Period	Service Period	Maximum Headway
Weekday Early Morning	6:00 am to 7:00 am	30 minutes
Weekday AM Peak	7:00 am to 9:00 am	30 minutes
Weekday Base	9:00 am to 2:00 pm	60 minutes
Weekday PM Peak	2:00 pm to 6:00 pm	30 minutes
Weekday Early Evening	6:00 pm to 9:00 pm	60 minutes
Weekday Late Evening	9:00 pm to 12:00 am	
Saturday Day	8:00 am to 9:00 pm	30 minutes
Saturday Evening	6:00 pm to 12:00am	
Sunday / Holidays	9:00 am to 7:00 pm	60 minutes

Industrial Routes - Minimum service frequencies and periods of service do not apply. The service levels and hours of operation for Industrial Routes are subject to demand and, as much as possible, matching the shift times of the various businesses within the area being served. Industrial Routes are measured against the minimum performance levels outlined in Section 5.4.2 below.

Express Routes - For Express Routes, minimum service frequencies and period of service criteria do not usually apply. Passenger loading, ridership demand and performance standards determine the service level. These services are typically only operated during the weekday peak and base periods.

Community Bus Routes - Minimum service frequencies and spans of service do not apply. Service frequency is determined by customer demand and the nature of the service provided.

### Decision Process for Modifying Service Levels

The following process will guide actions taken by London Transit to ensure compliance to the above standards.

- Modifications to service levels can be proactive (e.g. based on anticipated ridership growth due to a new development); or based on the overall performance of a route.
- An increase in service frequency should be considered on a route when the passenger comfort thresholds identified in Section 5.4.1 are consistently exceeded over a 6 to 12 month period or where the minimum boardings per revenue vehicle hour on the route far exceeds the minimum threshold identified in Section 5.4.2.
- Potential reductions in service frequency; service period; and/or route modifications should be considered when the targets by operating period identified in Section 5.4.2 are not achieved consistently over a 6 to 12 month period.
- If any Rapid Transit, Arterial or Local Routes fall below the minimum ridership threshold, modifications to the route should be made to improve overall ridership productivity while still meeting the minimum service hours and frequency identified in this standard. These measures can include the following:
  - Reduction in the service hours;
  - Reduction in frequency;
  - Adjustments to routing (e.g. improve directness);
  - Operational adjustments (e.g. interlining); and
  - Re-designation of the route (e.g. from Express to Arterial Route).

## 5.4 Service Performance Standards

Performance measures are used primarily to set desired and achievable goals for the performance of London Transit and permit evaluation and feedback on how well these goals are being met. The following section provides guidance on overall performance of the system in terms of the effectiveness of the service provided and the customer experience. This includes specific criteria for measuring passenger comfort, service utilization, service reliability and guidelines for service expansion.

### 5.4.1 Passenger Comfort (Vehicle Load) Standard

Passenger Comfort sets a standard of comfort for passengers while on board transit vehicles. If the number of passengers regularly riding during a service period exceeds the maximum target more than 15 percent of the time, the route should be reviewed. Corrective actions to maintain the standard can include adding trips to the schedule in the form of a frequency improvement; assignment of daily trippers; the introduction of an Express Route; and/or restructuring the service to distribute demand among several routes.

When many routes report high demand, priority for corrective action will be based on the degree of demand in excess of seated capacity and the overall average ridership of the route.

For peak period services, a loading threshold of 150 percent of seated capacity is the typical passenger comfort standard for many systems. Establishing and adhering to a fixed loading standard may be somewhat problematic given the range of vehicles currently operated. Similar sized buses in the fleet have similar overall capacities, but differ in their seating capacities depending on configuration. As the objective of this standard is to limit standees to a reasonable level in order to maintain passenger comfort, the 150 percent threshold remains appropriate for Arterial Routes, Local Routes and Industrial Routes during the busiest operating periods (weekday peak and base periods). Consideration should be given to matching the seated capacity of the vehicles to the ridership levels on the route, to avoid unnecessary increases in service levels.

Rapid Transit routes need to maintain their brand image and provide high levels of service quality and comfort. As such, a loading threshold of 133 percent of seated capacity is appropriate.

Express routes generally operate during the peak period and are subject to the same thresholds as the Arterial Routes and Local Routes.

For most off-peak periods, it is important to strive to provide a seat for all customers in consideration of generally less frequent service. Therefore, a loading threshold of 100 percent of seated capacity is appropriate for all services during weekday evening and weekend periods.

Community Bus Routes typically cater to clientele who are often restricted in their mobility. Therefore, it is appropriate to set a threshold of 100 percent of seated capacity.

The seating capacities of the vehicles in the London Transit fleet are as follows:

- 60-foot bus: 56 passenger seats per vehicle;
- 40-foot bus: between 34 and 40 passenger seats per vehicle;
- 30-foot bus: 30 passenger seats per vehicle.

The passenger comfort thresholds described above yield the Passenger Comfort Standards for the London Transit family of services as outlined in Table 10 below.



Table 10 – Passenger Comfort Standards (Maximum Passenger Loads)

Service Type	Weekday Peak & Base			All Other Service Periods		
Bus Type	60 ft	40 ft	30 ft	60 ft	40 ft	30 ft
Rapid Transit Routes – 133%*	75	45 to 53		56	34 to 40	
Arterial Routes - 150%	84	51 to 60		56	34 to 40	
Local Routes – 150%	84	51 to 60	45	56	34 to 40	30
Industrial Routes – 150%		51 to 60	45		34 to 40	30
Express Routes – 150%	84	51 to 60		56	34 to 40	
Community Routes - 100%		34 to 40	30		34 to 40	30

\*Note: Assume Bus Rapid Transit vehicles (subject to results of the Rapid Transit EA)

The ultimate proposed performance target (see below) is to have 85 percent of trips adhering to the passenger comfort thresholds in Table 10. For routes not achieving this standard, London Transit should establish a baseline to determine how many trips are within the target and then introduce continuous improvement objectives to improve performance until the 85 percent target is achieved. In calculating the baseline, it is suggested that an average capacity of 55 is used for the seating capacity of a 40' bus when measured during weekday peak and base periods.

The time period over which the 85 percent target is achieved is dependent on appropriate funding to increase service levels.

### Monitoring and Decision Making Process

Passenger Comfort measures are calculated at the peak point of the route and during the busiest hour of the route in the subject operating period. This may be a 60 minute period that is not necessarily a specific hour.

Data from the Automated Passenger Count (APC) system should be used to monitor Passenger Comfort Standards and the following process, programmed within the APC system, is suggested:

- Establish parameters within the APC system to identify passenger loads during the busiest hour of each route.
- Compare the passenger loads to the seated capacity standards of the bus and the passenger comfort standards as defined in Table 10 above.
- Create a monthly exception report which shows the occurrences when the above noted thresholds are exceeded, which should not be more than 15 percent of the busiest service hours on each route as mentioned above.

To entrench the importance of passenger comfort in the daily operations of London Transit and to address the service capacity issues currently being experienced, it is suggested that a Customer Service objective for staff be established as follows:

*“To recommend (service planning staff) and implement (operations staff) the appropriate actions to ensure that maximum hourly passenger loads are not exceeded during 85 percent of the busiest service hours.”*

If this objective is not being met and if customer complaints are being experienced, remedial measures should be taken, which may include frequency improvements; modifications to the route; assignment of higher capacity vehicle or planned dispatch of “tripper” services during targeted periods.

#### 5.4.2 System Productivity Standard

Service Productivity is a measurement of the effectiveness of the application of the system’s resources against pre-determined criteria. To establish thresholds for route performance requires an acknowledgement that various services, even within the same route classification, will vary in their performance, with some exhibiting superior performance and others exhibiting lower performance levels. To meet a variety of system objectives, top-performing routes must be allowed to support other lower performing routes, while continuing to ensure that:

- “Class Average” targets for each route classification meet system objectives; and
- “Route Minimum” performance targets for each of the individual routes are established and met.

Route performance should be assessed on the basis of total boardings per revenue-vehicle hour, since this statistic will appropriately credit those routes that perform a significant transfer role in the system.

Different classes of routes have different performance expectations and ridership potential. It is therefore appropriate that minimum productivity targets are established for each classification of routes. In addition, for each classification, minimum threshold levels should be established for peak, off-peak and weekend services, to reflect the relative operating, capital cost and resource allocation characteristics of the respective service periods.

In addition, triggers for service improvements should be provided to identify when service levels should be improved on individual routes.

#### Productivity by Route Classification

The rationale for productivity targets for each route classification is explained below and the revised actual targets are detailed in Table 6.

**Rapid Transit Routes** - Rapid Transit Routes are expected to perform at a high level and make a significant contribution to the system-wide performance targets and they are designed and branded to provide a high basic minimum level of service. Given their importance in the hierarchy of transit service

offerings, Rapid Transit Routes should be given more time to achieve targeted performance and should not be subject to the strict application of the productivity targets without considering the potential effects on the brand.

*Base Arterial Routes* - Base Arterial Routes are expected to perform at a high level and their operation is intended to provide a basic minimum level of service and route coverage, and support the Rapid Transit network. The performance of Base Arterial Routes is expected to make a significant contribution to the system-wide performance targets.

*Minor Arterial Routes* - These routes would typically attract less ridership than Base Arterial Routes and therefore are measured against a lower service productivity standard as indicated in Table 11 below.

*Local Routes* - The primary function of local routes is to maximize service coverage and to feed into the Arterial Route and Rapid Transit Route network. This often requires a more indirect routing and lower frequencies than Arterial Routes. As such, Local Routes are not expected to perform at a level as high as the Arterial Routes.

Over the course of time, due to development/intensification and/or ridership growth, Local Routes may become candidates for reclassification to a Minor Arterial Route. A Local Route may be reclassified to a Minor Arterial Route if:

- The Local Route consistently exceeds its daily class average productivity for all operating periods, and
- The design and service levels (when increased) of the Local Route can match the route classification criteria for a Minor Arterial Route, as set out in Section 5.2.

A reclassified route's productivity targets should be closely monitored for the first year to ensure that it meets or exceeds the Route Minimums for Minor Arterial Routes.

*Industrial Routes* - The primary function of Industrial Routes is to provide service to Industrial Areas at times and frequencies which match the shift times of the local businesses. Industrial areas are typically difficult to serve efficiently. Therefore their performance expectations and related productivity targets are generally lower than local routes during most time periods, as reflected in Table 11 below.

*Express Services* - These routes are a limited stop service and operate on the Base Arterial corridors as a supplement to Base Arterial Routes that are over capacity. Through consistent monitoring, it is important to ensure that the productivity target is maintained as shown in Table 11 below.

*Community Routes* - Community Routes are typically catered to senior citizens who travel during off-peak periods. The route is designed to place greater emphasis on access than directness of travel and speed. As such these routes are expected to operate at a generally lower productivity than the other fixed route classes in the system.

## Service Productivity Targets

Individual route performance should be assessed annually, as a minimum, based on overall daily service productivity targets, as outlined in Table 11.

Table 11 – Daily Service Productivity Targets – Boardings per Revenue Vehicle Hour

Route	Weekday Peak/Base		Weekday Evenings		Saturday		Sunday/Holiday	
	Class Avg.	Route Min.	Class Avg.	Route Min.	Class Avg.	Route Min.	Class Avg.	Route Min.
Rapid Transit Routes	75	50	55	30	50	30	30	20
Base Arterial Routes	75	50	50	30	50	30	30	20
Minor Arterial Routes	45	25	30	20	30	20	25	15
Local Routes	40	20	25	15	25	15	20	15
Industrial Routes	25	15	20	15	20	15	20	15
Express Routes	40	30						
Community Routes	15	15						

## Monitoring and Decision Making Process

Ridership data generated from the APC system, in conjunction with service hour statistics from the scheduling software should be used to obtain boardings per revenue hour data for the overall system, by route and time period as well as the class averages and route minimums for each service type. This analysis should be completed, at a minimum, on an annual basis (ideally every six months) and serve as a primary input to the Annual Service Plan process.

The Class Average represents the average utilization target that all routes in the Route

Classification should achieve during each operating period. Routes consistently exceeding the Class Average should be monitored and reviewed for potential improved service levels and/or reclassification to a higher level of service type (if applicable).

Routes consistently not meeting the prescribed minimum thresholds presented in Table 11 above, would be subject to review and consideration of the best option to improve performance. Options for remedial action would be subject to consideration of the characteristics of each route and its classification and would include service level adjustments, route restructuring, and operational modifications such as interlining. When adjusting individual routes and services, care must be taken to consider the impacts on the proximity standards and the connecting routes and services that customers are relying on.

### 5.4.3 Service Reliability Standard

Service reliability is a significant service quality factor influencing ridership, customer satisfaction and the reputation of the transit system. The reliability of service operating to published schedule times is consistently ranked very high in importance in customer satisfaction surveys.

A person using any transportation mode has an expectation that the service will be on time. Services that cannot meet their published schedules lose the loyalty of their customers. Consistently reliable arrival times also reduce waiting times for passengers at stops and such performance is critical, particularly during inclement weather. A high 'on time' performance will improve transit system credibility and build a positive image of the system.

#### On-Time Performance

The On-Time Performance Standard sets out guidelines for schedule adherence and transfer wait times. A review of actual on-time performance indicates that during the sample time periods, buses were "on-time" 65 percent of the time. On-time performance is typically measured as "not early and up to three minutes later than the published scheduled time". Customer dissatisfaction with this level of performance is confirmed by a recent on-line survey.

The current operating environment at London Transit indicates that attempts to address this sub-standard performance are frustrated by the serious overcrowding which exists on many routes. Alleviation of overcrowding can improve on-time performance. Certain routes also have a significant number of closely spaced bus stops (below the minimum threshold identified in Table 6). A more detailed review of bus stop spaces will also help alleviate schedule adherence issues.

The existing scheduling package used by London Transit has some limitations to how 'on-time performance' is tracked, resulting in certain 'on-time' trips being marked as 'early'. London Transit is currently working with the software vendor to address this to be able to provide more accurate data on on-time performance.

In anticipation of service modifications and improvements to current passenger crowding issues, a revised on-time performance standard is proposed below. The standard is consistent with other peer systems surveyed and addresses customer complaints. It should be recognized that this is a targeted standard which may not be achieved for two to three years until the required service improvements are implemented.

#### Recommended On-time Performance Standard:

- Buses shall be no more than five minutes late departing a published timing point, 90 percent of the time.
- At no time will a bus depart early from a published timing point.
- Timed bus meets at major terminals, when scheduled as such, shall provide a minimum of three (3) minutes to allow passengers to transfer between buses.

## Monitoring and Decision Making Process

On-time performance should be measured at the route and time period level. Actual times are compared with published times and measurements obtained to show the status of performance as being “on-time”, “late” or “early”. Exception reports are created for specific periods, to show the details of services not meeting the on-time performance standard.

Moving forward, daily, weekly and monthly exception reports should be generated to show the time and location of individual buses not meeting the on-time performance standard. Careful analysis of consistently “early” and “late” arrivals is required by operations and service development staff to determine the root cause of the schedule adherence problem.

If the above on-time performance standards are not met on a regular basis for a specific route, London Transit should consider a range of options including; adjusting the published schedule; adjusting route timing; providing additional training for drivers or; in the case of Rapid Transit Routes and the Base Arterial Routes, modifying or adding transit priority measures.

## Service Disruptions

Service Reliability is also impacted by daily unforeseen events which disrupt service; causing delays or cancellations. Events which cause service disruptions can be classified in to various types such as: operator late or “no show”; no vehicle available; vehicle breakdown; operator illness or accident; weather related; bus at loading capacity and unable to pick-up; etc.

In order to manage these events and attempt to minimize service disruptions it is important to track these daily occurrences in terms of the time, location and duration of each event, so that a data base can be established for later analysis.

Data analysis will establish a base line for each type of disruption, leading to the development of measures, KPI's and objectives all targeted to more effective operations and maintenance practices and improved service reliability.

London Transit has an established performance management system and, if not already included, it would be appropriate to add a series of performance objectives for service disruptions; together with staff roles, responsibilities and accountabilities clearly defined.

### 5.4.4 Guidelines for Service Expansion

This standard sets both policy direction and performance targets that should be achieved when introducing a new bus route or extending an existing route into a new area. A new or extended transit route may be required as residential areas are developed; to improve the proximity of transit service or in response to growth in major commercial, institutional or employment areas.

Throughout the evaluation process for new transit services, London Transit staff will actively work with the City's Planning Department to provide new route design and stop locations to serve growth in

advance of development approval. This coordination will also contribute to the implementation of transit oriented design principles in the new growth areas.

The expansion of service into new development areas is based on minimum population and employment thresholds being in place to meet minimum ridership performance targets.

Prior to the development of annual service plans, LTC staff will review developing areas within the Urban Service Area and identify a potential transit route to provide service to the new development. Existing and proposed short-term (1-2 year) population and employment forecasts, within the catchment area of the potential route, will be calculated based on discussions with the City's Planning Department. Ridership forecasts will be completed using a standard forecasting tool to assess the potential ridership on the new route.

Based on this assessment, a new route will be considered where:

- The roadways on which the proposed route will operate on are in a condition to support regular transit operations. Proper infrastructure (curbs, sidewalks, street lighting, etc.) should be in place and construction activity should be at a level where construction equipment will not interfere with the safe operation of transit vehicles or impede on-time service delivery.
- Roadways must be assumed by the municipality.
- Ridership forecasts predict that the boardings per revenue vehicle hour threshold (see Table 11) for the proposed route are expected to be met within 18 months of implementation to support the efficient operation of public transit.

Implementation of new transit service is subject to the availability of adequate funding to acquire physical and human resources. If approved, the Service Plan may be implemented in stages, with components, not yet implemented, becoming a priority for subsequent annual Service Plans.

### Monitoring and Decision Making Process

In evaluating the effectiveness of new and extended services, interim performance targets, based on boardings per revenue vehicle hour, are established throughout the first year of operation of the new or extended services, as described below.

#### *New Service Areas*

Services introduced in new areas not previously served by transit should be guaranteed for a minimum 12 months of operation to ensure adequate time for travel patterns to adjust and for year round ridership patterns to be assessed.

The performance target should be reached within 18 months of operation. Interim targets are set to ensure that a service, which is clearly not capable of meeting the ultimate targets, is identified as early as possible. Monitoring should be performed at 3, 6, 9 and 12 months intervals to ensure that the new service is trending towards the appropriate standard. For these interim periods, minimum performance thresholds (boardings per revenue vehicle hour) as described in Table 11, form the basis for interim targets as follows:



- After 3 months – achieve 20 percent of the minimum boardings per revenue vehicle hour threshold for the route classification.
- After 6 months – achieve 40 percent of the minimum boardings per revenue vehicle hour threshold.
- After 9 months – achieve 60 percent of the minimum boardings per revenue vehicle hour threshold.
- After 12 months – achieve 80 percent of the minimum boardings per revenue vehicle hour threshold, assuming full build out.
- After 18 months - achieve 100 percent of the minimum boardings per revenue vehicle hour threshold, assuming full build out.

If the performance at the end of each period has not reached at least 75 percent of the targeted values, the route should be re-examined to identify potential changes or corrective actions to improve its performance. If the required standards are not met in the next period, the identified changes/actions should be implemented.

For new routes in growth areas, minimum boardings per revenue vehicle hour should be achieved within 18 months after the full build out of the service catchment area.

#### *Service Changes within the Existing Built Area*

New services, or service enhancements, introduced within the established areas of the city, should also be guaranteed for a minimum 12 months of operation to ensure adequate time for travel patterns to adjust and for year round ridership patterns to be assessed. These services are subject to a higher standard of performance than services to new areas of the city.

Monitoring should be performed at 6 and 9 months intervals to ensure that the new service is trending towards the appropriate standard. For these interim periods, minimum performance thresholds (boardings per revenue vehicle hour) as described in Table 11 form the basis for interim targets as follows:

- After 6 months – achieve 80 percent of the minimum boardings per revenue vehicle hour threshold for the route classification.
- After 9 months – achieve 90 percent of the minimum boardings per revenue vehicle hour threshold.

If the performance at the end of each period has not reached at least 75 percent of the targeted values, the route should be re-examined to identify potential changes or corrective actions to improve its performance. If the same standards are not met in the next period, the identified changes/corrective actions should be implemented.

For service changes within the Urban Growth Boundary of London, the minimum boardings per revenue vehicle hour target for the route classification should be achieved within 1 year.

## Corrective Actions

The achievement of appropriate ridership standards is key in the evaluation of new services. If these standards are not being met, corrective actions are necessary. The implementation of various service planning; operations or marketing initiatives, with subsequent monitoring would all be targeted to improved performance. If these initiatives fail, cancellation of service should only be considered as a last resort and other criteria should also be applied when deciding whether or not a struggling new service should be continued. These criteria include:

- The right of access to public transit for residents within a community;
- The mobility of area residents who may be transit dependent;
- The connectivity of an area to the rest of the transit network;
- The achievement of transit proximity standards; and
- The importance of a small feeder route in providing transfers to Rapid Transit services.

## 5.5 System Wide Measures of Success

System-wide measures of success provide an overarching view of the degree to which the London Transit system is achieving the approved goals and objectives, including transit mode share targets set in the Transportation Master Plan. The following provide key measures of success for London Transit. Each of the previous design standards and performance measures will have an impact on achieving these measures of success.

There are many factors external to the control of the municipality (such as changes in the cost of auto ownership, employment rates) that will influence London Transit's ability to meet each target. There are also many factors external to the transit system's control (such as degree of intensification around nodes and along corridors) that will be significant influences. Nevertheless, these key success measures are indicative of the desired role of public transit in addressing the quality of life objectives of London residents. These measures should be monitored and reported on an annual basis to assess progress in achieving the overall goals and objectives of London Transit and the City.

The ridership growth necessary to achieve the ultimate mode share and ridership per capita targets means that a fundamental behavioural shift is required along with new approaches to mobility management. Improved transit has to be a central strategy in facilitating such behavioural change.

Table 12 – System Wide Measures of Success

Performance Objective	Associated Key Performance Indicator	Associated Target
Ridership Growth	Annual revenue passengers	Increase annual revenue passengers by a minimum of 2 percent per year.
	Transit mode share	Increase PM peak hour modal split from 12% to 14% by 2019.
Service Effectiveness	Ridership per Capita	Increase ridership per capita from 63.1 (2013) to 71 by 2019.
	Ridership per Revenue Service Hour	Increase system ridership per revenue service hour from 42.1 (2013) to 44 by 2019.
Financial Performance	Cost Recovery	Maintain a minimum system R/C of 50% while achieving ridership growth and mode share targets.

*Note – System wide measures should be consistent with the “Driving Change” document: Ridership projected to grow by 50% from 2013 to 2024. Transit mode share 12.5% in 2013.*

#### Note on Financial Performance

Revenue Cost Ratio is a financial performance indicator for a transit system that measures the total passenger revenues collected as a percentage of the total operating costs of the system. The revenue component is influenced by both the amount of ridership and the level of fares charged. The cost component is driven by the efficiency of service delivery (cost per bus hour) as well as the amount of service hours supported by the financial plan.

London Transit is currently operating at an R/C ratio of 57 percent (2013). This is a very high R/C ratio compared to other systems in London Transit’s peer group (average 45 percent). For each system, the R/C is typically driven by municipal policy on level of service and fares/investment each Council/Commission is willing to support.

Transit systems that are in a strong ridership growth mode typically achieve a lower R/C ratio due to the need to increase service hours to attract passengers. Costs are immediate and ridership/revenue takes time to develop. With the City targeting a significant increase in transit modal share by 2031 and the implementation of two rapid transit corridors, a significant investment in level of service will be required to attract the necessary ridership to meet the target and build rapid transit ridership. While there appears to be some room to increase fares, the preferred policy direction may be that, while ridership builds, a lower Revenue Cost ratio, as proposed above, should be targeted in the short and medium term.

## 6.0 REVIEW OF EXISTING NETWORK

### 6.1 Route Structure

London Transit operates a multi-nodal system with a number of routes connecting to various key destinations throughout the City. While a large portion of the existing routes connect to the downtown, Western University, Fanshawe College, Masonville Mall, Argyle Mall, Westmount Shopping Centre and White Oaks Mall act as terminals providing access to a number of bus routes.

**Base Routes** – London Transit Operates 37 base arterial and local routes connecting London's neighbourhoods and key nodes with the downtown. Transit service is provided Monday to Friday from 6:00am to 12:00am, Saturday from 6:00am to 12:00am and Sunday from 9:00am to 11:00pm. Regular routes run on a modified schedule on statutory holidays. Service frequency varies depending on the route and time of day. Frequencies can vary from a bus every 6 minutes to every 60 minutes.

**Express Routes** – London Transit operates two express services designed as a limited stop providing faster service on two major corridors. The 90 express operates as a north/south express service along Richmond Street and Wellington Street anchored by Masonville Mall and White Oaks Mall. The 91 express operates from September to April as an east/west express service along Oxford Street anchored by Fanshawe College and Wonderland Road.

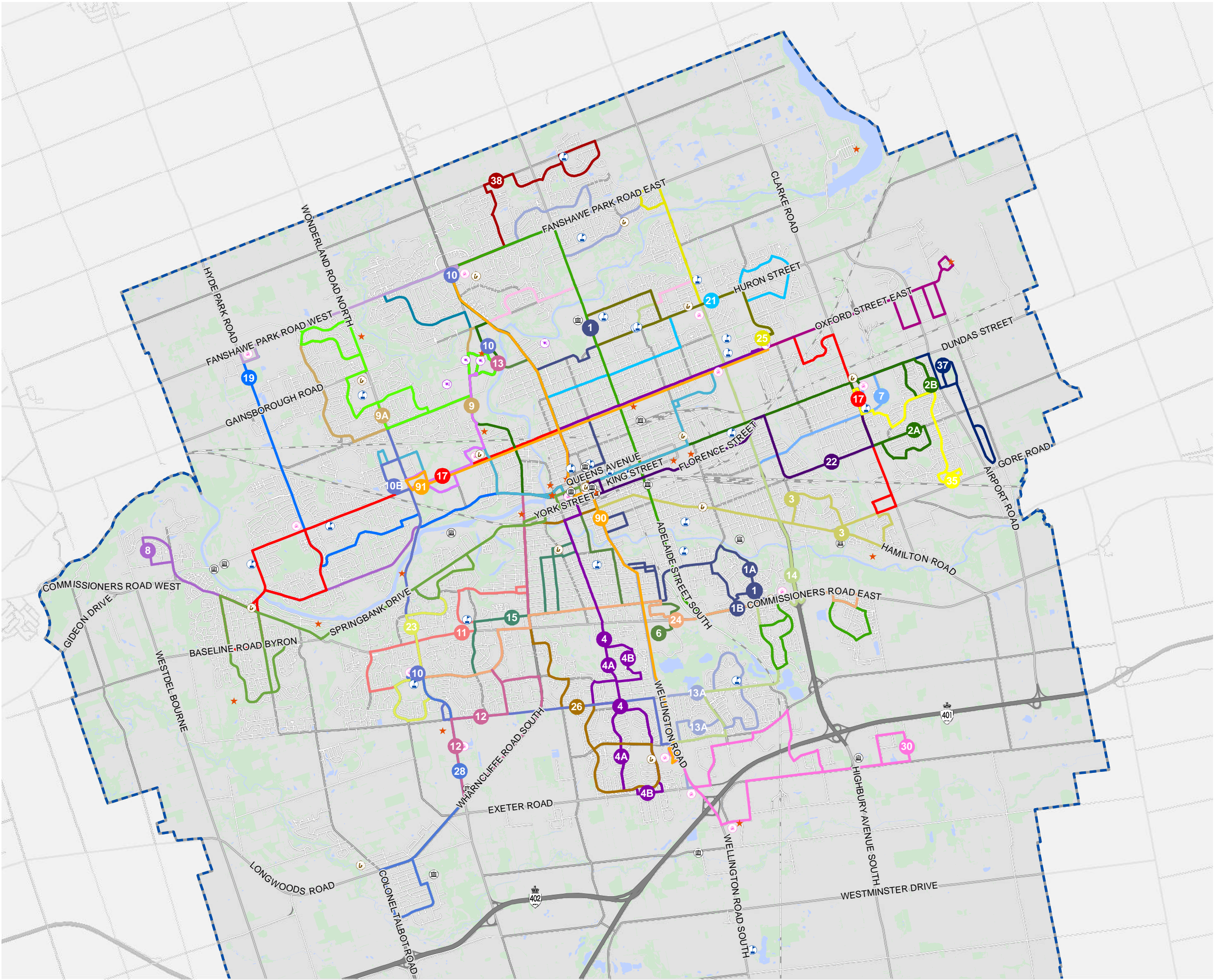
**Community Bus** – The Cherryhill Community bus service is designed to serve the needs of seniors and persons with mobility challenges. The service is focused on providing door-to-door convenient accessible services to places of interest for seniors and persons with disabilities, while using simple scheduling and timing points of conventional service. The existing service operates four different routes depending on the day of the week. The service is in operation Monday to Friday from 9:00am-2:00pm.

The existing service is illustrated in Figure 4. As part of the service standard review, revised route classifications were created. Section 5.2 details the proposed route classifications. Table 13 summarizes the existing routes as assigned to the new classifications.

Table 13 – Proposed Route Classifications for Existing Routes

Classification	Routes				
Express	90	91			
Base Arterial	2	10	13	16	17
Minor Arterial	3	4	5	6	7
	12	14	19	20	21
	22	24	26	39	
Local	1	8	9	11	15
	23	25	27	28	31
	32	33	34	35	38
Industrial	30	36	37		
Community Bus	51	53	54		

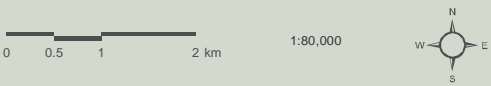




LONDON TRANSIT ROUTE REVIEW

EXISTING TRANSIT ROUTE STRUCTURE  
FIGURE 4

- ★ Attraction
- 🏛️ City Facility
- 🎓 Post Secondary School
- 🎓 High School
- 📖 Library
- 🛍️ Shopping Centre
- ▭ Municipal Boundary
- 1 Transit Route



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## 6.2 Coverage/Proximity to Transit Services

The London Transit service area is comprised of the developed areas within the City of London. Approximately 78 percent of population and employment in London's Urban Area is within 400 metres (5 minute walk) of a London Transit bus stop as shown on Figure 5. This falls below the proposed proximity service standard that suggests 85 percent of population and employment be within a 400 metre walk of a London Transit bus stop. Moving towards this standard involves both modification of the route structure and a priority to intensify population and employment growth along transit corridors.

## 6.3 Span of Services

Hours of service, also known as "service span", is the number of hours during the day when transit service is provided. LTC currently operates Monday to Saturday from 6:00am to 12:00am and Sunday from 9:00am to 11:00pm. As seen in Table 2 under the benchmark review, LTC is at the lower end of its peer group when it comes to service span. The majority of its peers operate longer spans of service on weekdays, Saturdays and Sundays. The feedback during the consultation activities revealed a desire from passengers for extended service hours, particularly on Sunday.

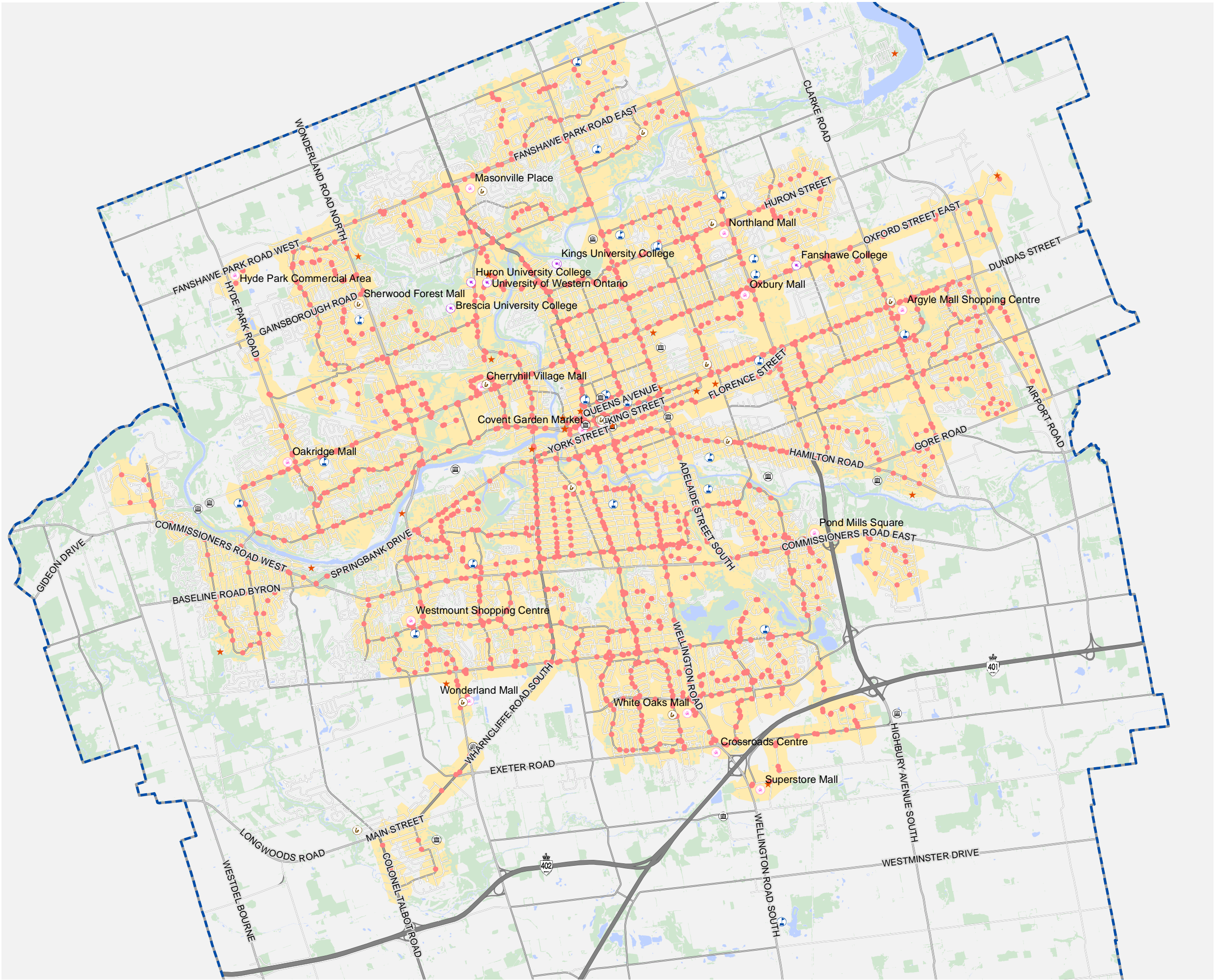
A review of boardings per revenue vehicle hour during the first and last hour of service on weekdays, Saturdays and Sundays was completed to determine if a service span extension would yield adequate ridership levels to maintain a productive service (as defined in the service standards guideline). The estimate was based on a trend analysis of the percent increase from one hour to the next in addition to experience with similar transit systems. Table 14 summarizes the completed analysis. Priority for increases to service span were given based on maximizing ridership increases, availability of resources, policy considerations and requests from customers.

Table 14 – Service Span Analysis

Time Period	Existing Start/End	Existing Boardings per Revenue Vehicle Hour	Potential Start/End	Anticipated Boardings per Revenue Vehicle Hour
Weekday Early Morning	6:00am	19 B/RVH	5:00am	10-15 B/RVH
Weekday Late Evening	Midnight	12 B/RVH	1:00am	8-10 B/RVH
Saturday Early Morning	6:00am	23 B/RVH	5:00am	10-12 B/RVH
Saturday Late Evening	Midnight	13 B/RVH	1:00am	8-10 B/RVH
Sunday Early Morning	9:00am	45 B/RVH	7:00am	25-30 B/RVH
Sunday Late Evening	11:00pm	15 B/RVH	12:00am	6-8 B/RVH

Based on this analysis, the priority for service span expansion includes Sunday early morning followed by weekday early mornings.





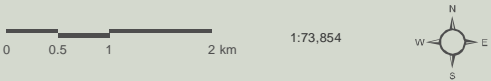
LONDON TRANSIT ROUTE REVIEW

EXISTING PROXIMITY TO TRANSIT SERVICE  
(WEEKDAY PEAK AND BASE PERIODS)

FIGURE 5

- Bus Stop
- ★ Attraction
- 🏢 City Facility
- 🎓 Post Secondary School
- 🏫 High School
- 📖 Library
- 🛍 Shopping Centre
- ▭ Municipal Boundary
- 🟡 400m Coverage

78% of the City's population and employment are within 400m walking distance of a bus stop.



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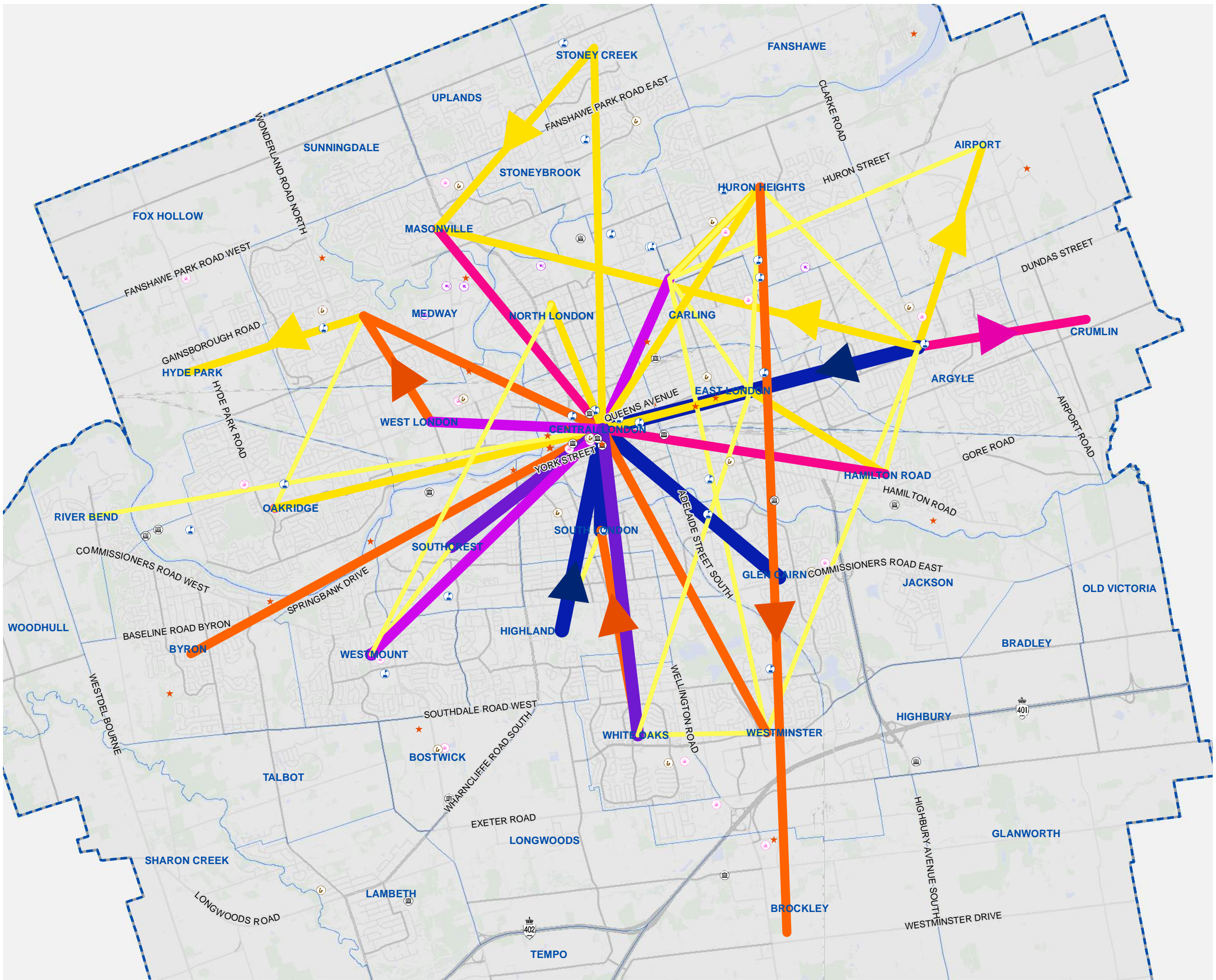
## 6.4 Origins/Destinations

As part of the City's Transportation Master Plan, a detailed transportation model was developed to incorporate proposed growth and allocation of growth and demographic forecasts. The model was designed to forecast the number of trips expected to be made during peak periods in 2030. Using the 2009 and 2030 AM peak model matrices from Scenario 2 of the TMP, the origin and destination patterns for all modes were reviewed.

Within the model, the City is divided into traffic analysis zones (TAZ) and trip matrices are output to show the number of trips that occur to and from TAZs. Typical levels of disaggregation produce hundreds of TAZs. The City of London has been divided in just over 600 zones. Conducting meaningful analysis with this many zones becomes a difficult task. Having a large number of zones makes it difficult to identify major demand corridors. Without aggregating the TAZs together the demand remains spread out and demand corridors are not inherently obvious. By combining zones together and reducing the number of zones that need to be analyzed, desire lines become more obvious. It is also easier to manipulate the data when dealing with a smaller number of zones.

The TAZs were aggregated together to form the City's designated Planning Districts. This resulted in 42 zones. The travel demand was also aggregated to determine the total demand to and from the planning districts. This data was then visualized in GIS to create flow maps and assess existing travel patterns as well as future travel patterns. Figure 6 displays the existing 2009 AM peak hour travel demand (all trips), while Figure 7 shows the future 2030 AM peak hour travel demand (all trips).

As seen in the figures, existing travel patterns are focused to the downtown core and will remain focused on the downtown core in the future. There are also concentrations to the planning districts with Western University, Masonville Mall, White Oaks Mall and Fanshawe College. These travel patterns were taken into consideration when considering Part 1 and Part 2 network designs.



LONDON TRANSIT ROUTE REVIEW

EXISTING 2009 AM PEAK MODEL TRAVEL DEMAND (ALL TRIPS)

FIGURE 6

- Attraction
  - City Facility
  - Post Secondary School
  - High School
  - Library
  - Shopping Centre
- 2009 All Trips (Top 60)**
- < 400
  - 600
  - 800
  - 1000
  - 1200
  - 1400
  - 1600
  - > 1600
- Municipal Boundary
  - Planning District

0 0.5 1 2 km



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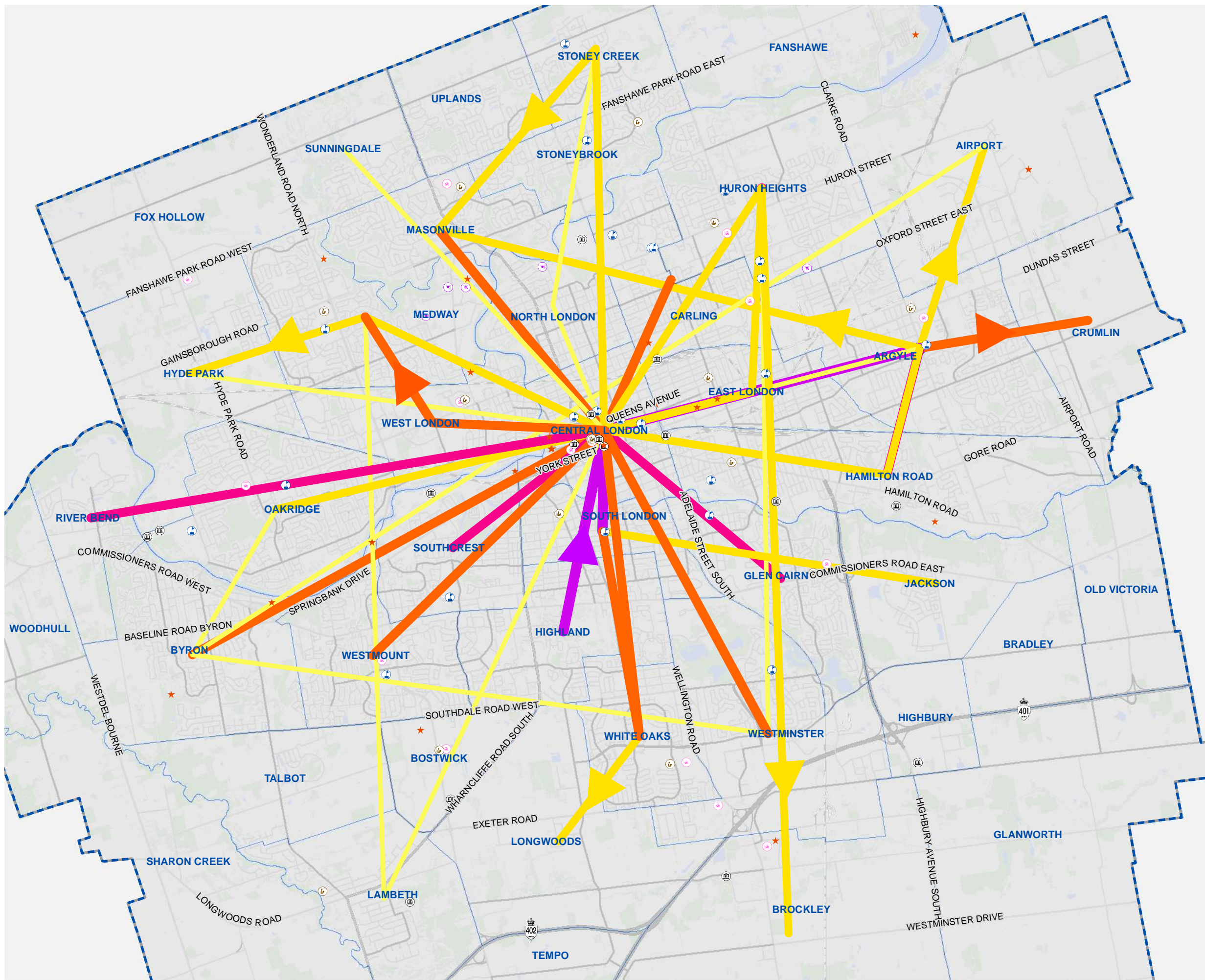
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## LONDON TRANSIT ROUTE REVIEW

### FUTURE 2030 AM PEAK MODEL TRAVEL DEMAND (ALL TRIPS)

FIGURE 7

- ★ Attraction
- City Facility
- Post Secondary School
- High School
- Library
- Shopping Centre

#### 2030 All Trips (Top 60)

- < 400
- 600
- 800
- 1000
- 1200
- 1400
- 1600
- > 1600

- Municipal Boundary
- Planning District



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## 6.5 Network Level Ridership and Performance

From 2008 to 2013 London Transit's operating and performance statistics have remained stable. Over the last six years there have been no major changes in service. Ridership continues to increase, as does the service area population. The trends between 2008 and 2013 are illustrated in Table 15 and Figure 8. As seen in the table, ridership has increased twice as fast as population growth since 2008 which has resulted in a significant increase in ridership per capita. Over the years, London Transit has minimally increased its revenue vehicle hours due to current economic challenges, including constraints on public investment.

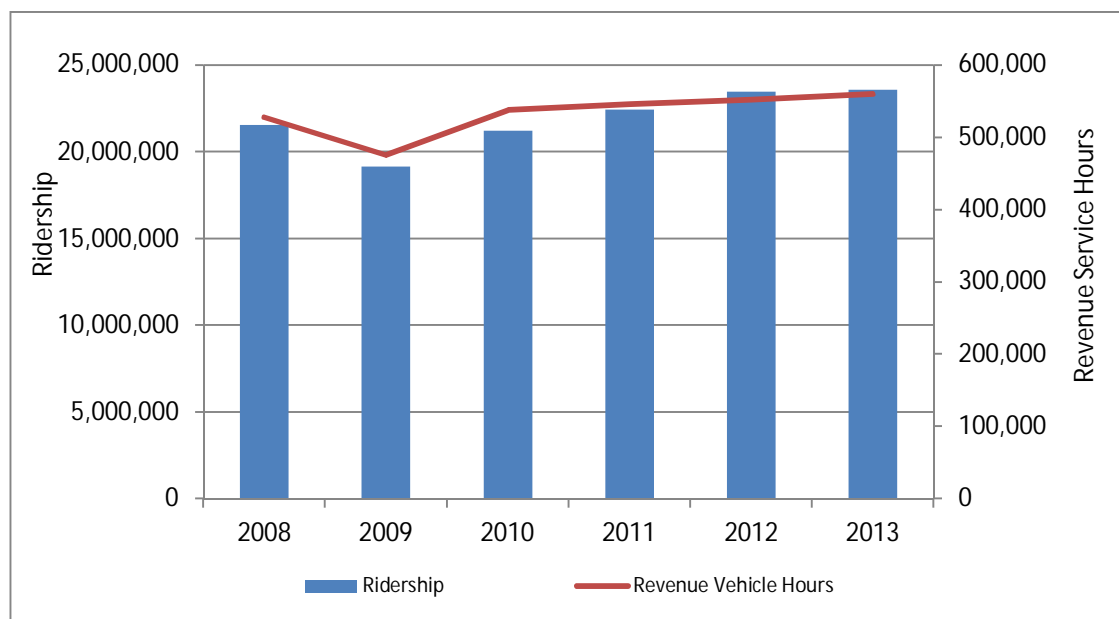
While the increase in hours is similar to the increase in population growth, the system has lagged when compared to the increase in ridership. This has resulted in overcrowding and capacity issues within the system, especially on routes serving the downtown and post-secondary institutions. The additional hours have been used to address the most significant service quality issues and ridership retention, not ridership growth.

Table 15 – Trends in Ridership, Service Hours and Financial Performance

Year	Service Area Population	Ridership		Revenue Vehicle Hours		Financial Performance		
		Total	/Capita	Total	/Capita	Revenue	Operating Cost	R/C
2008	356,100	21,566,877	60.56	528,320	1.38	\$27,542,672	\$47,535,373	58%
2009	356,100	19,145,634	53.76	475,270	1.33	\$25,974,012	\$43,526,791	60%
2010	362,200	21,204,220	58.54	537,436	1.48	\$28,693,249	\$49,316,222	58%
2011	360,000	22,436,392	62.32	545,590	1.52	\$30,725,228	\$53,204,150	58%
2012	369,940	23,482,319	63.48	551,617	1.49	\$30,725,228	\$53,204,150	58%
2013	373,730	23,570,746	63.07	559,518	1.50	\$32,345,123	\$56,532,008	57%
% Change	4.95%	9.29%	4.14%	5.91%	8.70%	17.44%	18.93%	



Figure 8 – Trends in Ridership and Service Hours



## 6.6 Route Level Productivity

Route productivity is a measurement of the effectiveness of the application of the system's resources against pre-determined criteria. Route performance was assessed using LTC's 2014 ridership data.

Ridership and performance measures were evaluated by routes, time of day and day of the week to assess the effectiveness of each route. London Transit collects ridership data through the use of an APC (automatic passenger counter) system installed on a number of buses.

London Transit collects data for the fall/winter, spring and summer schedule periods. Ridership levels during the fall schedule period (when schools and post-secondary institutions are in session, and when adult travel is least affected by vacation periods) was used for analyses conducted during the study.

The proposed service guideline for each route category was developed as part of this project (see Section 5.4) is shown in Table 16.

Table 16 – Proposed London Transit Route Productivity Targets

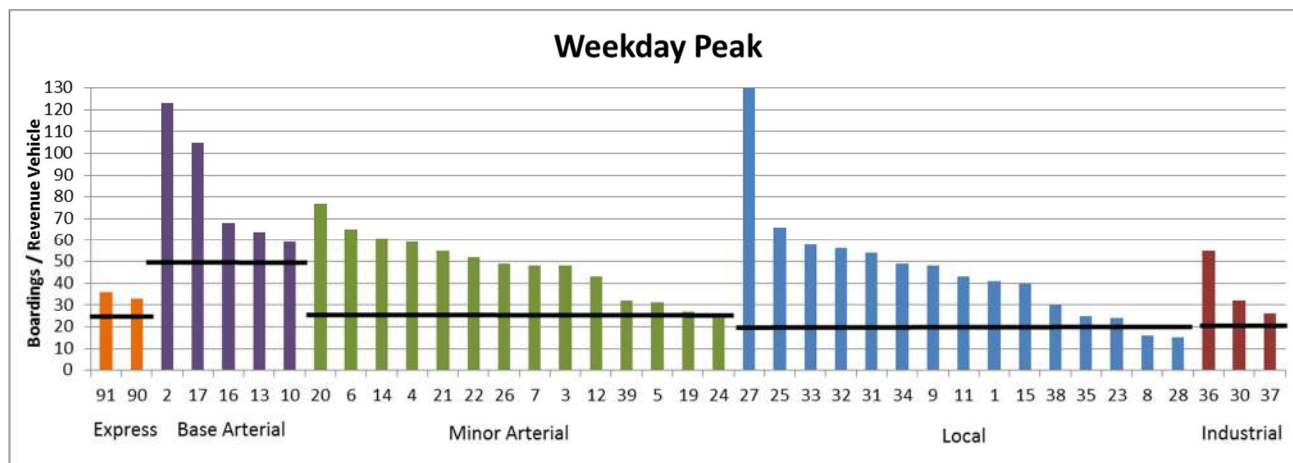
Route Type	Minimum Boardings per Revenue Service Hour			
	Weekday Peak	Weekday Evening	Saturday	Sunday
Rapid Transit Routes	50	30	30	20
Base Arterial Routes	50	30	30	20
Minor Arterial Routes	25	20	20	15
Local Routes	20	15	15	15
Industrial Routes	20	15	15	15
Express Routes	30			
Community Routes	15			

Figure 9 through Figure 12 illustrate the 2014 daily fall passenger boardings per revenue vehicle hour for each of the following time periods:

- Weekday Peak Periods (beginning of service to 6:00pm)
- Weekday Evening (6:00pm to end of service)
- Saturday (all day)
- Sunday (all day)

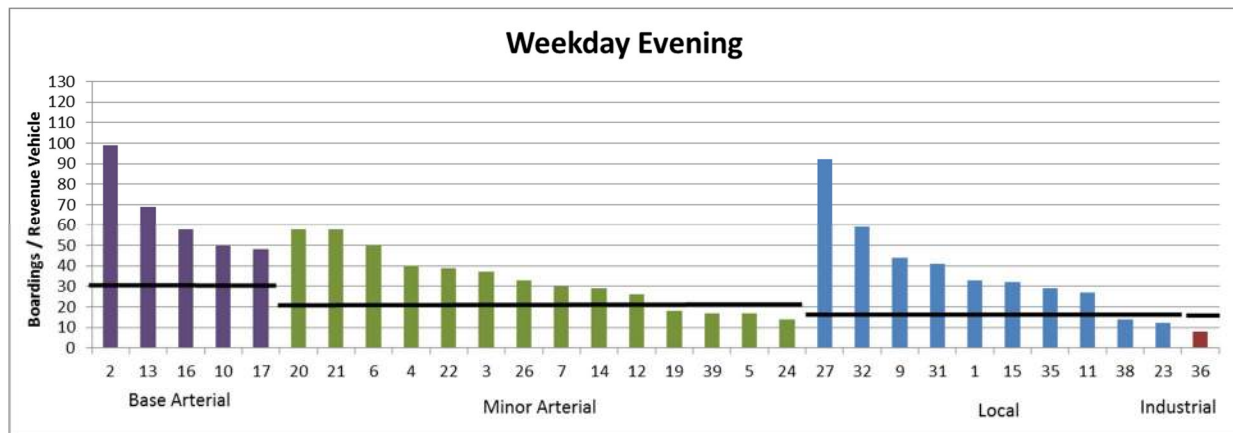
The minimum route productivity standard is indicated by the black lines in the graphs.

Figure 9 – Average 2014 Weekday Peak Boardings per Revenue Vehicle Hour



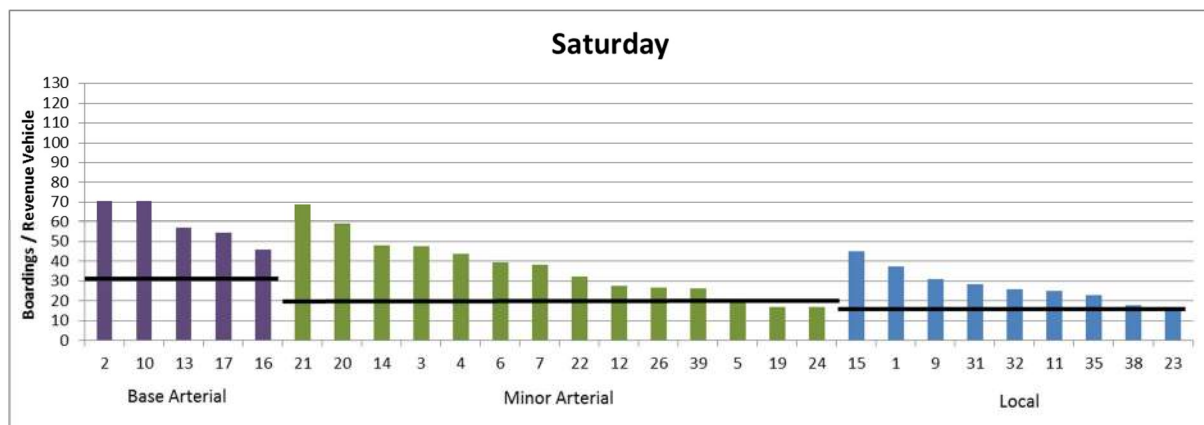
As illustrated above, all routes with the exception of Route 8 - Riverside, 24 – Base Line and 28 - Lambeth are performing above the weekday peak productivity target for their respective route type.

Figure 10 – Average 2014 Weekday Evening Boardings per Revenue Vehicle Hour



As illustrated above, all routes with the exception of Route 19 - Oakridge, 39 – Fanshawe West, 5 - Springbank, 24 – Base Line, 38 – Stoney Creek, 23 - Berkshire and 36 – Airport Industrial are performing above the weekday evening productivity target for their respective route type.

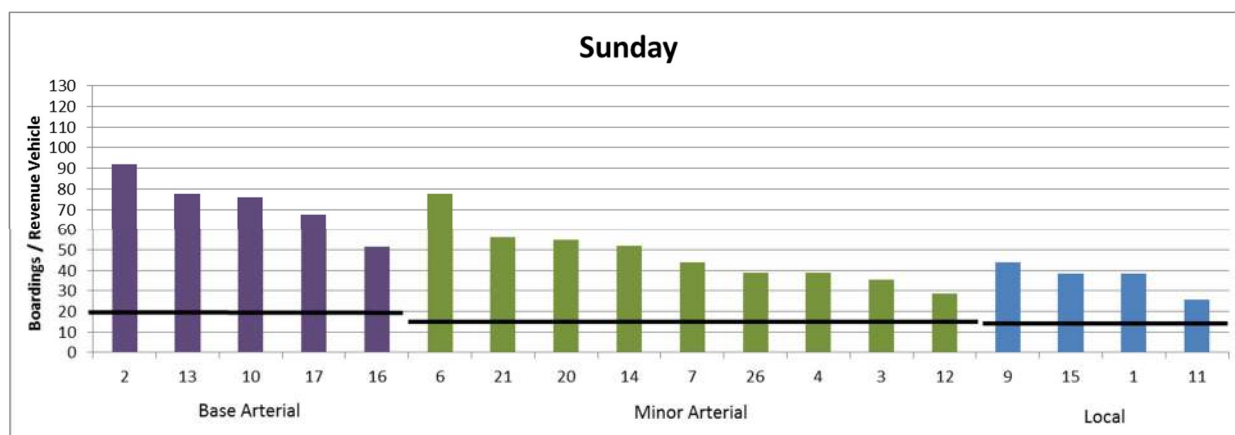
Figure 11 – Average 2014 Saturday Boardings per Revenue Vehicle Hour



As illustrated above, all routes perform above the Saturday productivity target with the exception of Route 19 - Oakridge and Route 24 – Base Line.



Figure 12 – Average 2014 Sunday Boardings per Revenue Vehicle Hour



As illustrated above, all routes are performing above the Sunday productivity target for their respective route type.

## 6.7 Passenger Load Profiles

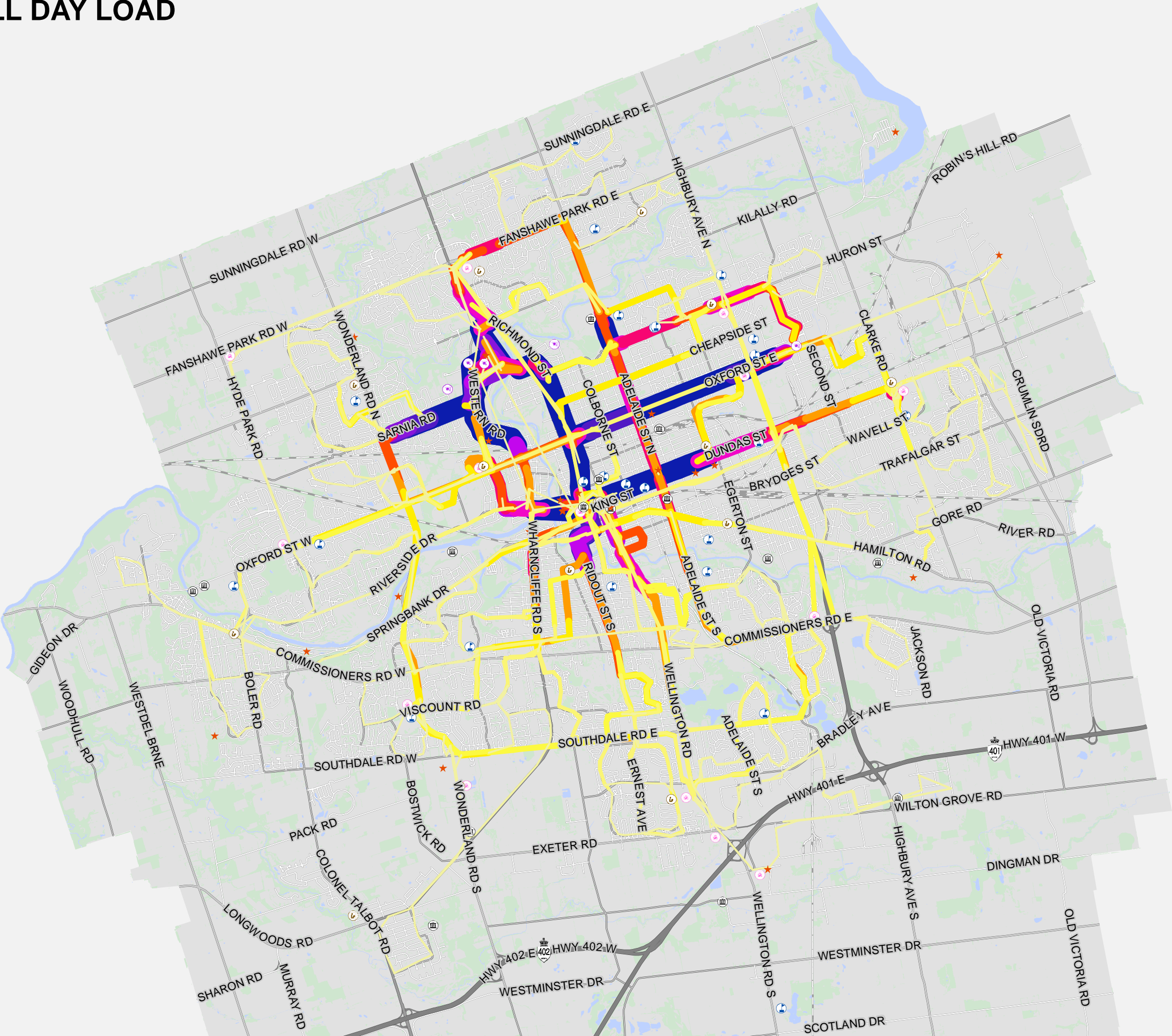
While the productivity indicator reported above provides an overall indication of a route's utilization, it does not measure variations in the intensity of passenger use along the length of a route. For example, a route with a high value of boardings per revenue vehicle hour could have a short section where buses are very crowded and other sections where buses are lightly loaded. Analysis of these variations is important to identify instances where a route might be under-utilized or overly crowded.

To assess how existing service is matched to passenger demand patterns, passenger load profiles were developed for each route and time period. To do this, stop-level boarding/alighting data for each scheduled trip in the Fall 2014 signup were combined with LTC's schedule data contained in the General Transit Feed Specification (GTFS) to calculate passenger loads between each pair of successive stops on each trip. The stop-to-stop passenger load data was then aggregated at various levels (route, direction, time period) for subsequent analysis using GIS tools.

For the overall existing network, Figure 13 displays the all-day weekday profile of passenger loads across all routes. This map depicts the most heavily-used travel corridors within the system. The highest concentration of demand occurs along Sarnia Road and all corridors leading to Western University. Oxford Street, Dundas Street and Adelaide Street are also major travel corridors. The demand data was compared against the existing capacity on each corridor (calculated by taking an average carrying capacity of a bus and multiplying it by the number of buses that pass through the corridor during specific time periods). This analysis was used to confirm reported crowding issues and determine whether the level of service matched passenger demand.

Load profiles by direction and time of day were also assessed for each route. Figure 14 provides an example load profile for Route 2 - Dundas during each of several time periods.

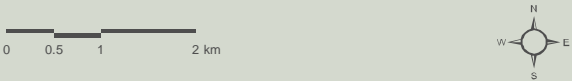
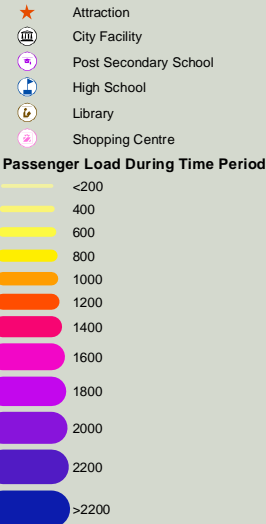
ALL DAY LOAD



LONDON TRANSIT ROUTE REVIEW

EXISTING 2014 ALL DAY LOAD PROFILE

FIGURE 13



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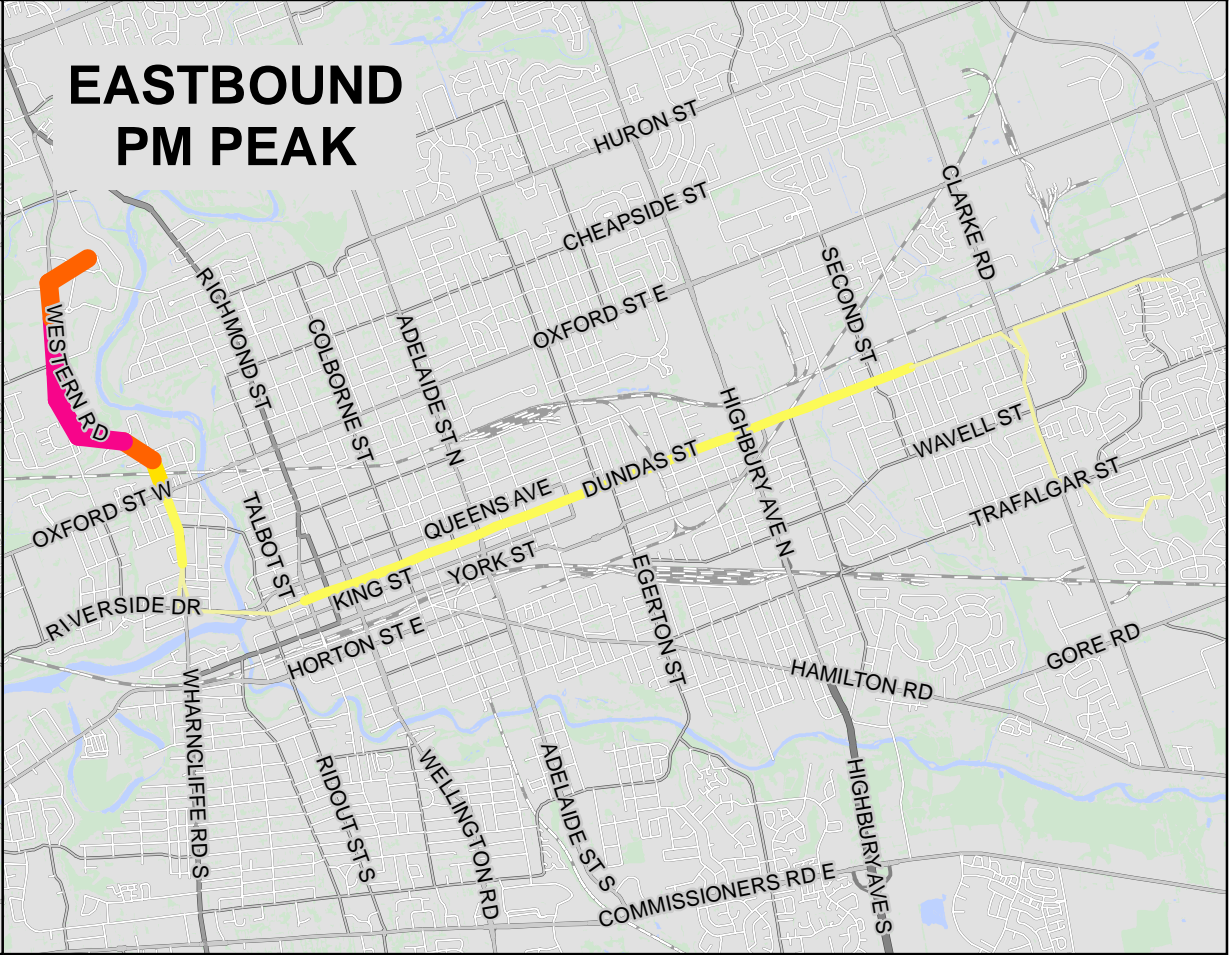
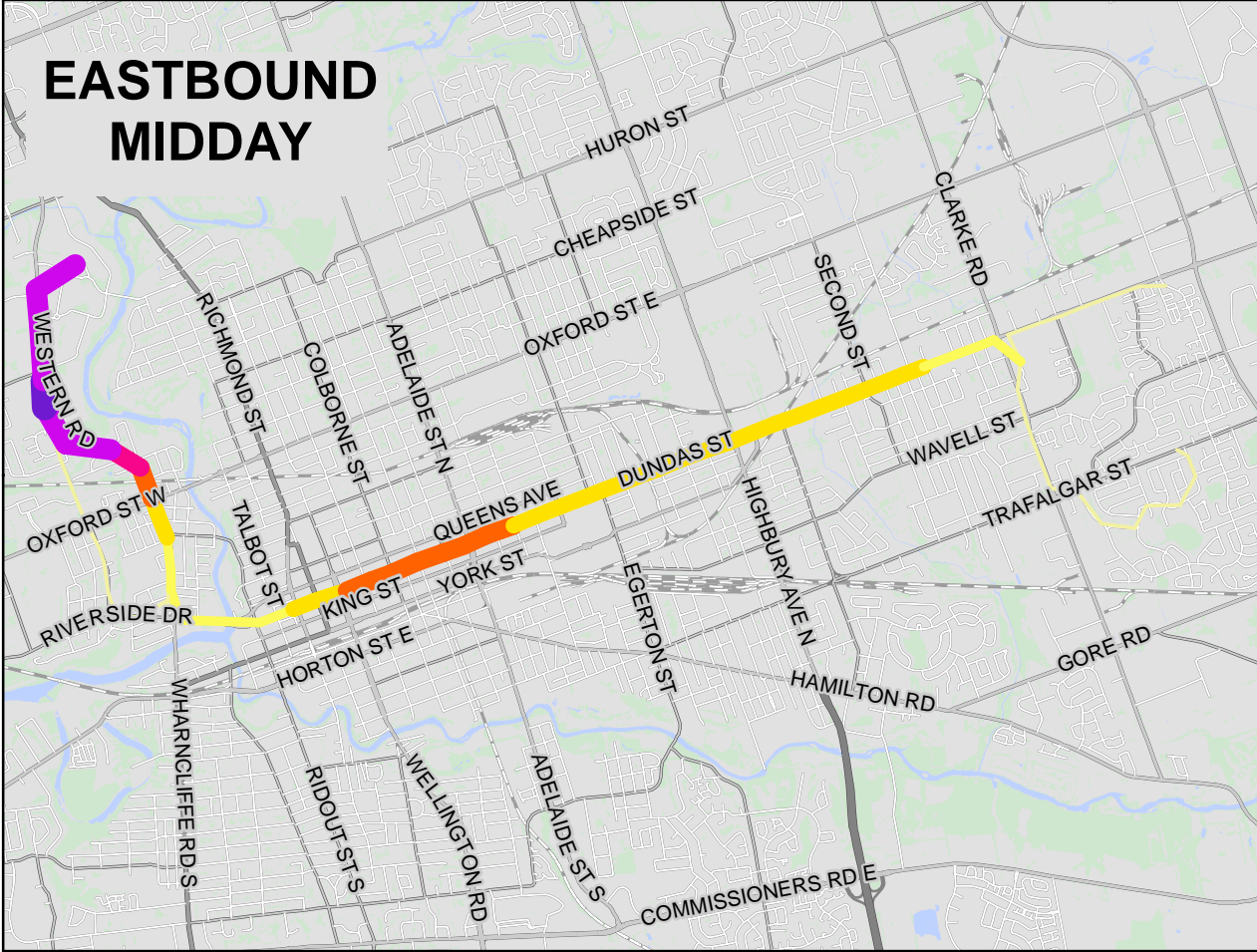
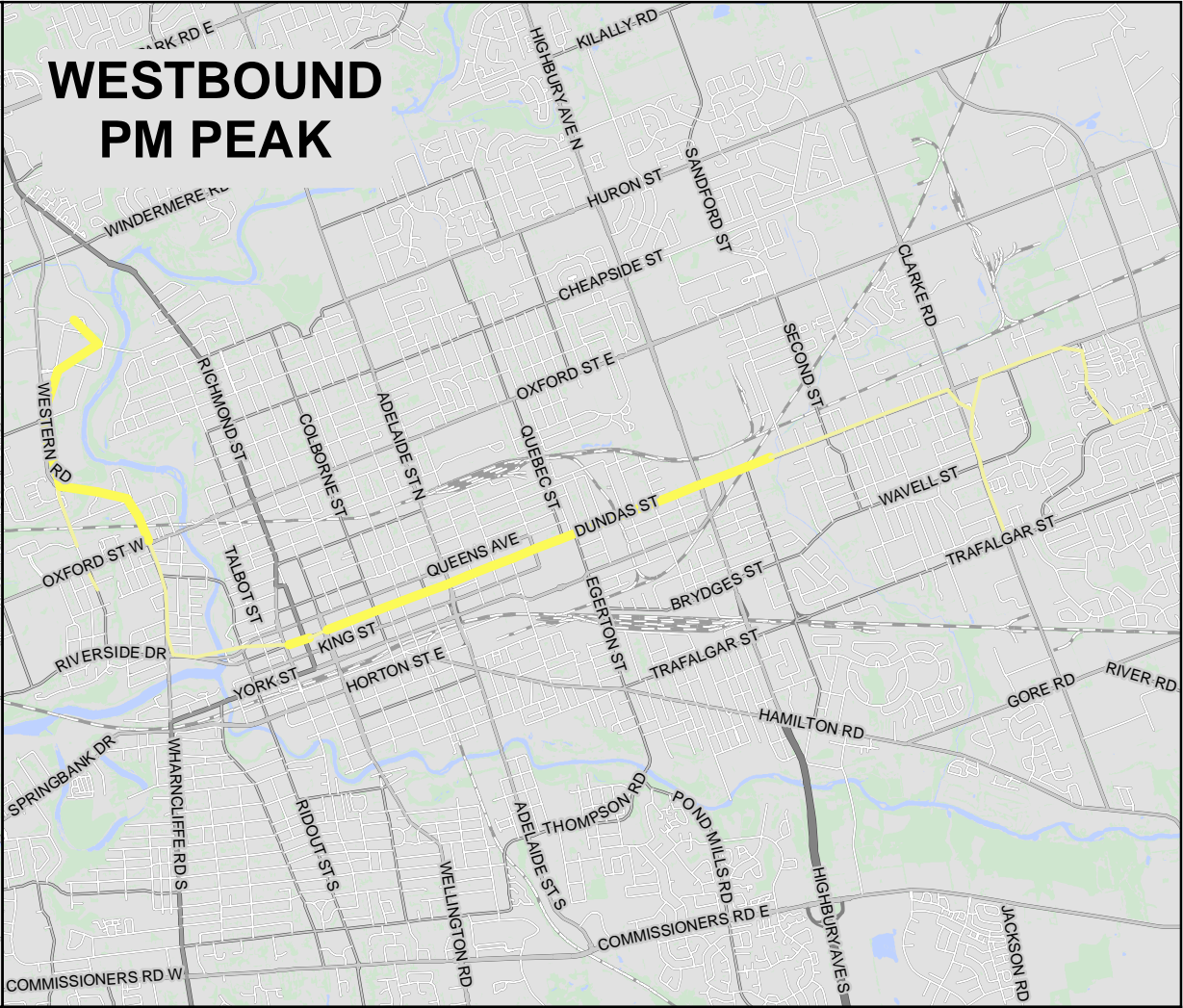
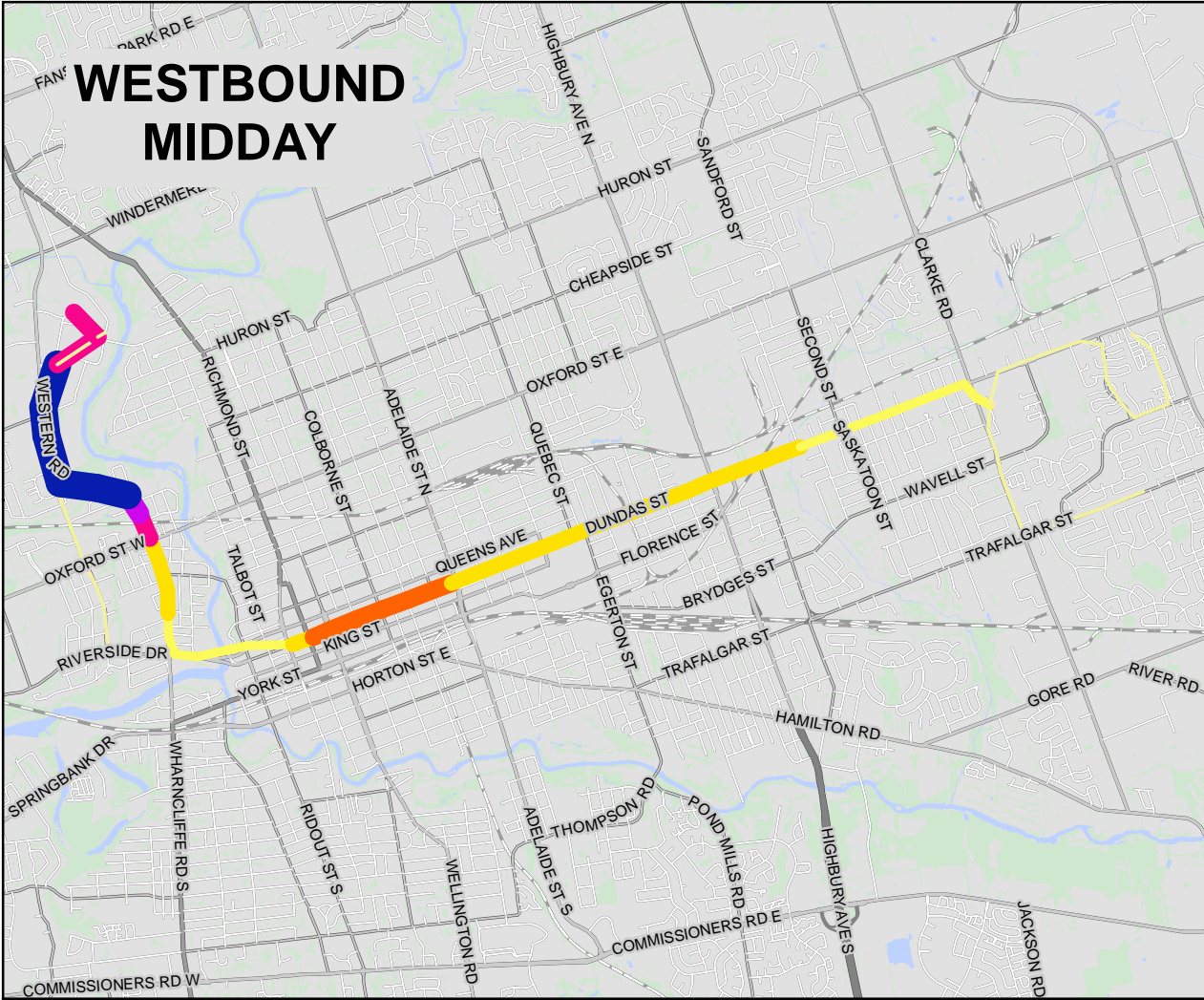
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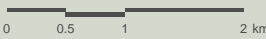
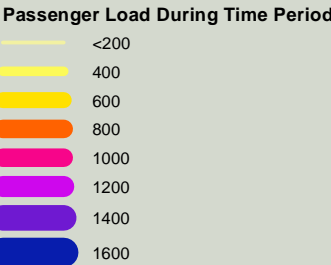
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LONDON TRANSIT ROUTE REVIEW

EXISTING 2014 ROUTE 2 LOAD PROFILE  
FIGURE 14



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The load profiles show that demand is significantly higher between Western University and downtown compared to east of downtown. While the western segment of the route is very busy, the peak load profile does not exceed the capacity of the route in this corridor suggesting that the existing service level can accommodate the demand. East of the downtown, the demand on Route 2 - Dundas significantly drops and drops again east of Highbury Avenue. This suggests that the existing service level east of downtown may not be warranted as the level of service for this long route is planned to accommodate the higher passenger demand between the downtown and Western University. These types of analysis for existing routes helped inform the recommendations for the Part 1 network.

## 6.8 Passenger Crowding

Consultation with existing passengers revealed a number of crowding issues occurring on specific routes, particularly those that connect to Western University and Fanshawe College. Direct observation and the load profile data identified in Section 6.7 was used to confirm the systemic nature of crowding.

While the load profile data did not identify any corridors where the peak passenger load exceeded capacity, there are a number of corridors identified where the peak load was near the acceptable capacity. While the issue does not appear to be chronic, ridership patterns are not always constant each day and go through peaks and valleys. It is important to note that the ridership data used for analysis represents a snapshot of the system at one time. With the varying schedules of post-secondary students among other factors, ridership can fluctuate on a day-to-day basis. While this particular sample of data is not reflective of direct overcrowding issues, these issues do occur on key routes that serve the post-secondary institutions. Table 17 provides a summary of potential crowding issues by route. The table identifies the peak load during the PM peak period for the peak direction of travel on the route. It provides a comparison to the existing capacity during the time period. The existing capacity was measured by using a bus capacity of 55 passengers and multiplying it by the number of buses scheduled during the PM peak period.

Table 17 – Potential Crowding Issues by Route (PM Peak Load Profile)

Route	Corridor Segment	Peak Load	Capacity	% Utilized
Route 2	Western Road from Hollywood Crescent to Lambton Drive	900	1,925	47%
Route 4	From Quebec Street to Fanshawe College	415	825	50%
Route 6	Richmond Street from Huron Street to Western University	575	1,045	55%
Route 10	From Western University to Sarnia Road and Coombs Avenue	415	990	42%
Route 13	From Richmond Street and Sunnyside Drive to Western University	311	550	57%
Route 16	Adelaide Street from Oxford Street to Huron Street	245	495	49%

Route	Corridor Segment	Peak Load	Capacity	% Utilized
Route 20	Oxford Street from Highbury Avenue to Fanshawe College Riverside Drive from Platt's Lane to Ridout Street.	232	440	53%
Route 27	From Fanshawe College to Huron Street	331	440	75%
Route 21	Cheapside Street from Brompton Road to Waterloo Street	192	550	35%
Route 33	From Cherryhill Place to Western University	153	220	70%

For these route and corridor segments, the Five-Year Service Plan assessed opportunities to improve the level of service.

## 6.9 Stop Activity

Stop activity (boardings and alightings) at each stop was analyzed at the system level and by route, direction, and time period. The stop activity data was used to identify impacts on existing passengers of route realignment options considered during the development of the Five-Year Service Plan.

Figure 15 displays visually the all-day stop activity on the network during weekdays and identifies major passenger trip origins and destinations. The highest concentration of passenger activity occurs at Western University, downtown and Fanshawe College. Secondary areas typically occur at London's shopping malls (Masonville Mall, Argyle Mall, White Oaks Mall and Westmount Mall) and at key transfer points in the system. Corridors with high concentrations of passenger activity can also be seen through this visual analysis. Key travel corridors in London Transit's network include:

1. Richmond Street (between downtown and Masonville Mall);
2. Western Road (between Oxford Street and Western University);
3. Wharncliffe Road (between the downtown and Western Road);
4. Oxford Street (between Fanshawe College and Wonderland Road);
5. Adelaide Street (between Fanshawe Park Drive and Hamilton Road);
6. Dundas Street (between downtown and Highbury);
7. Wonderland Road (north of Oxford Street to Sarnia Road); and
8. Sarnia Road (between Wonderland Road and Western Road).

Figure 15 – All Day Stop Activity on Weekdays (Fall 2014)

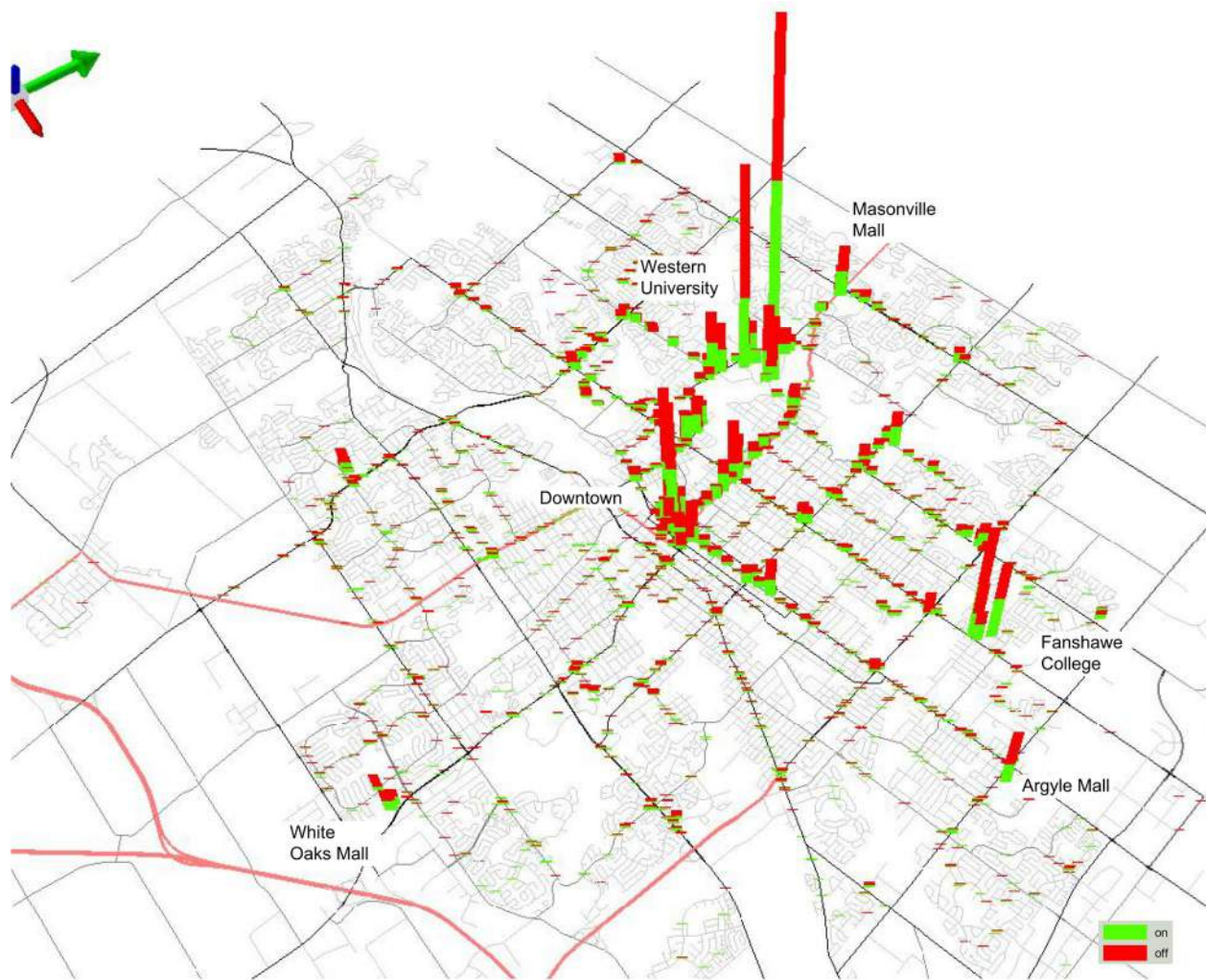
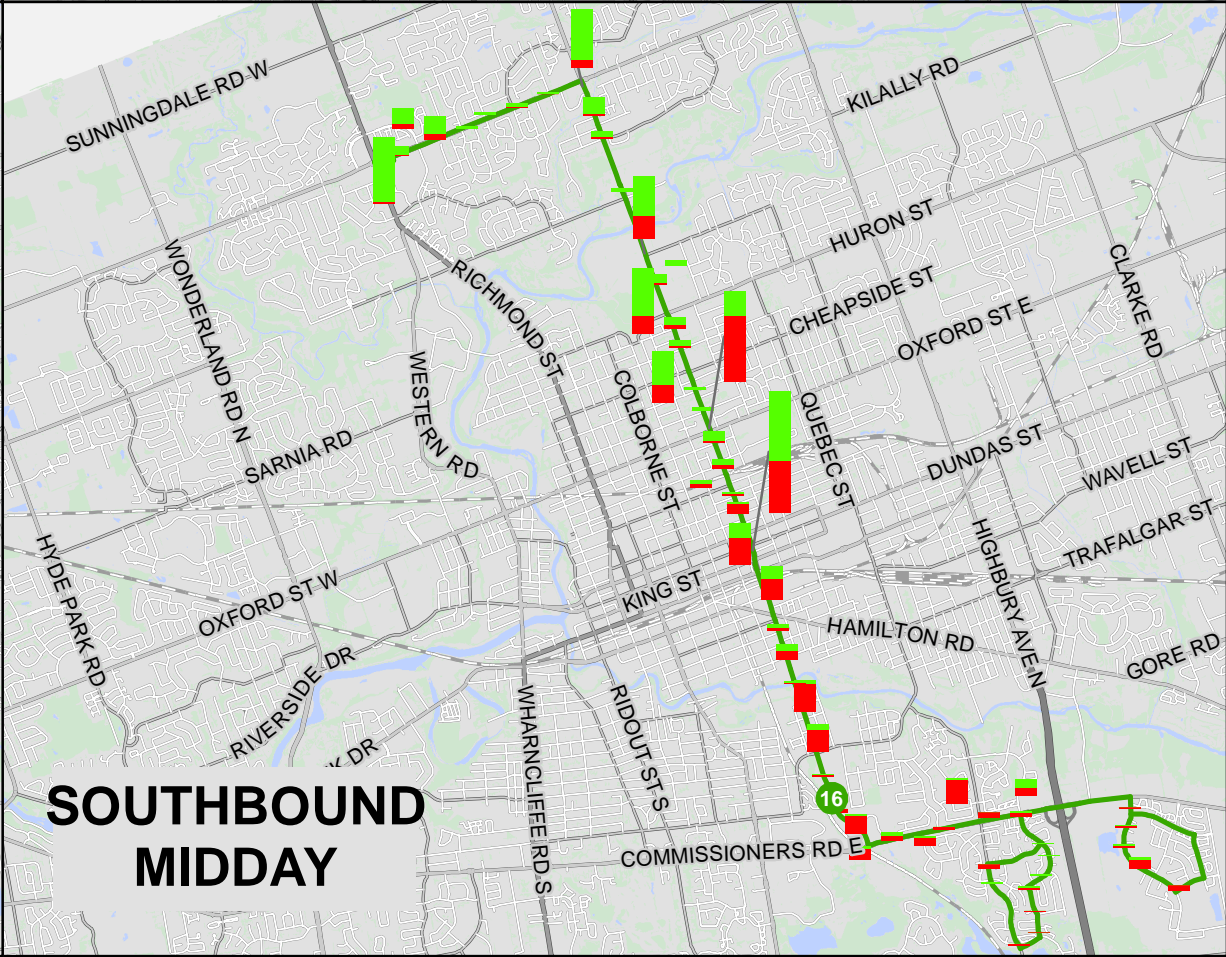
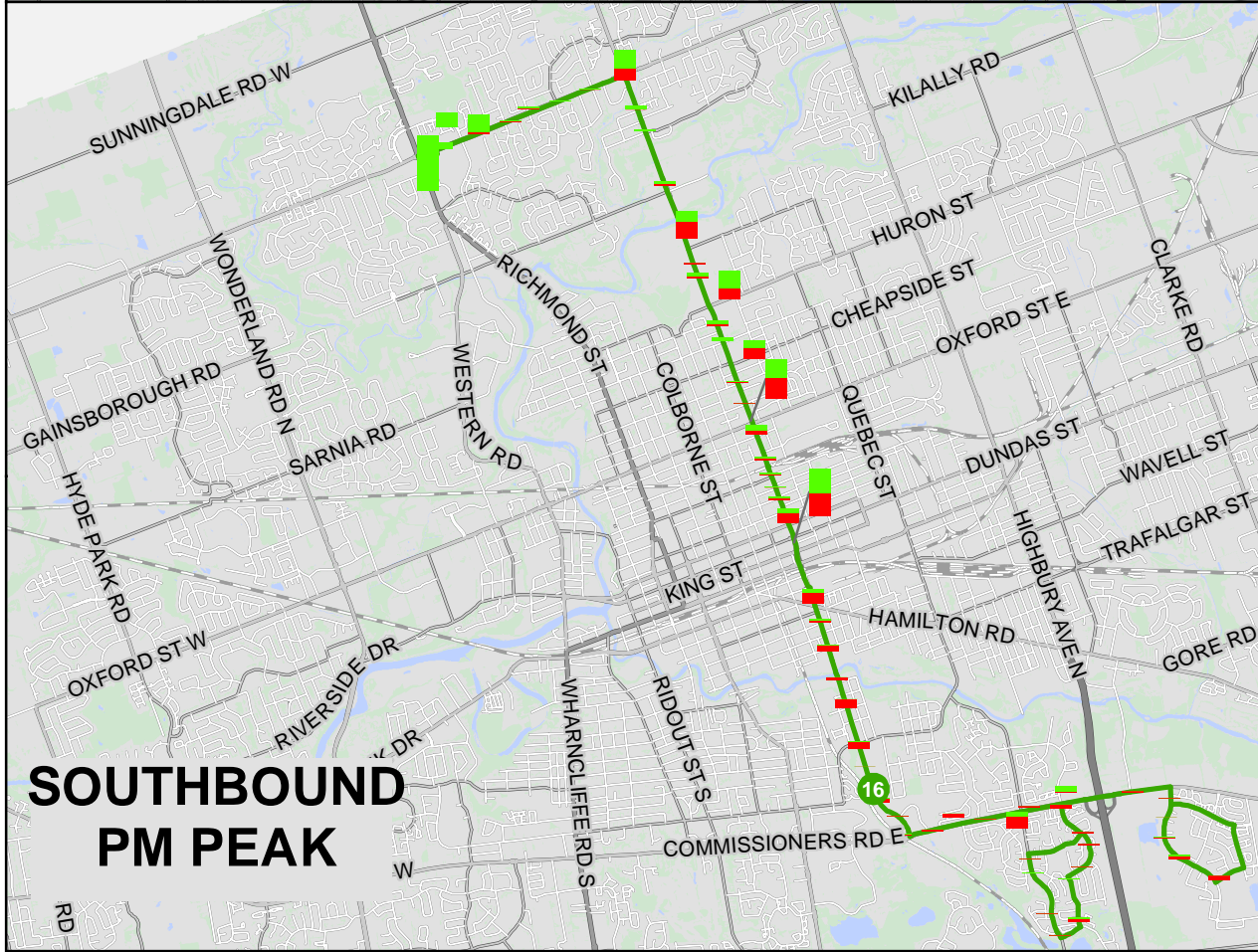
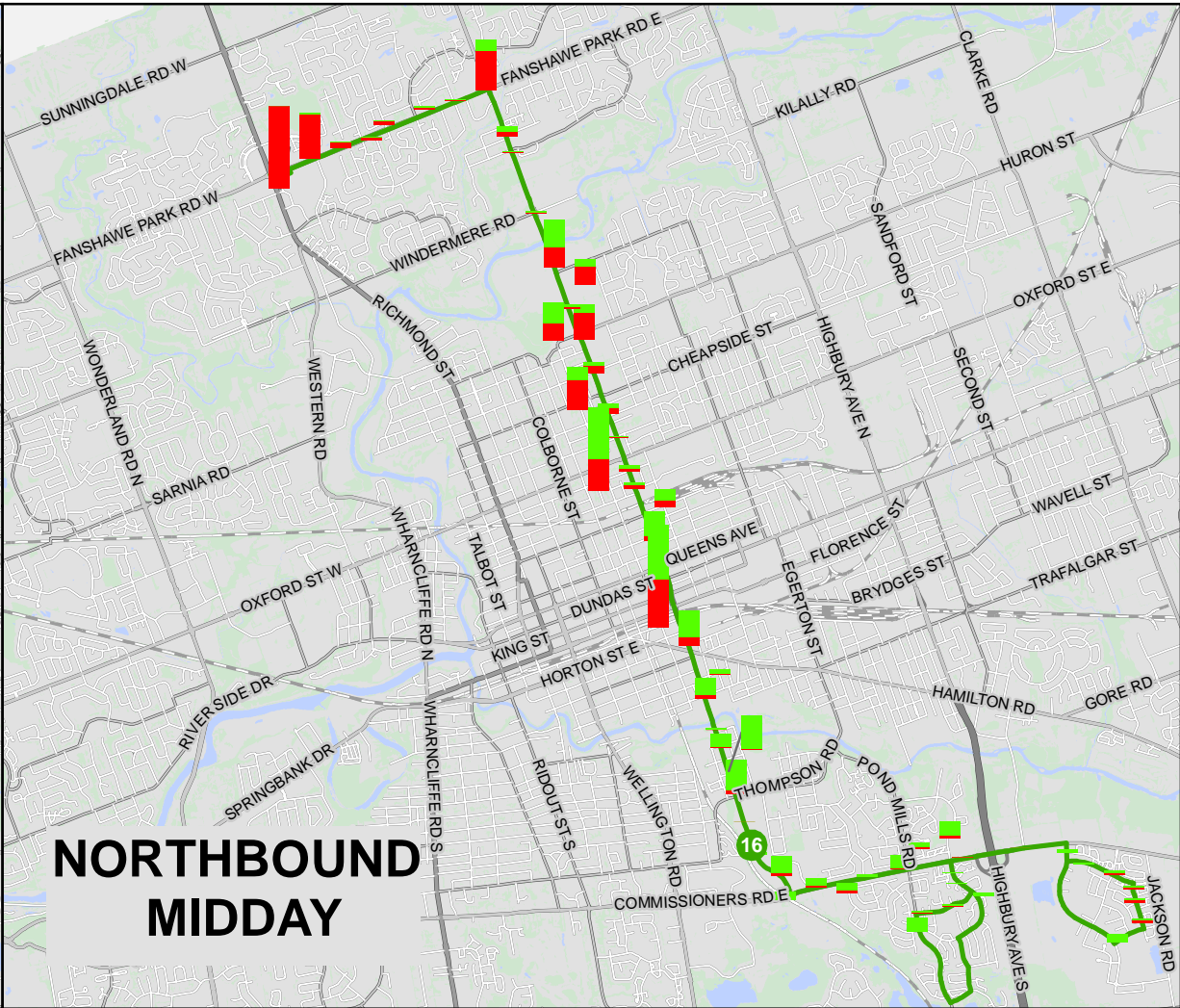
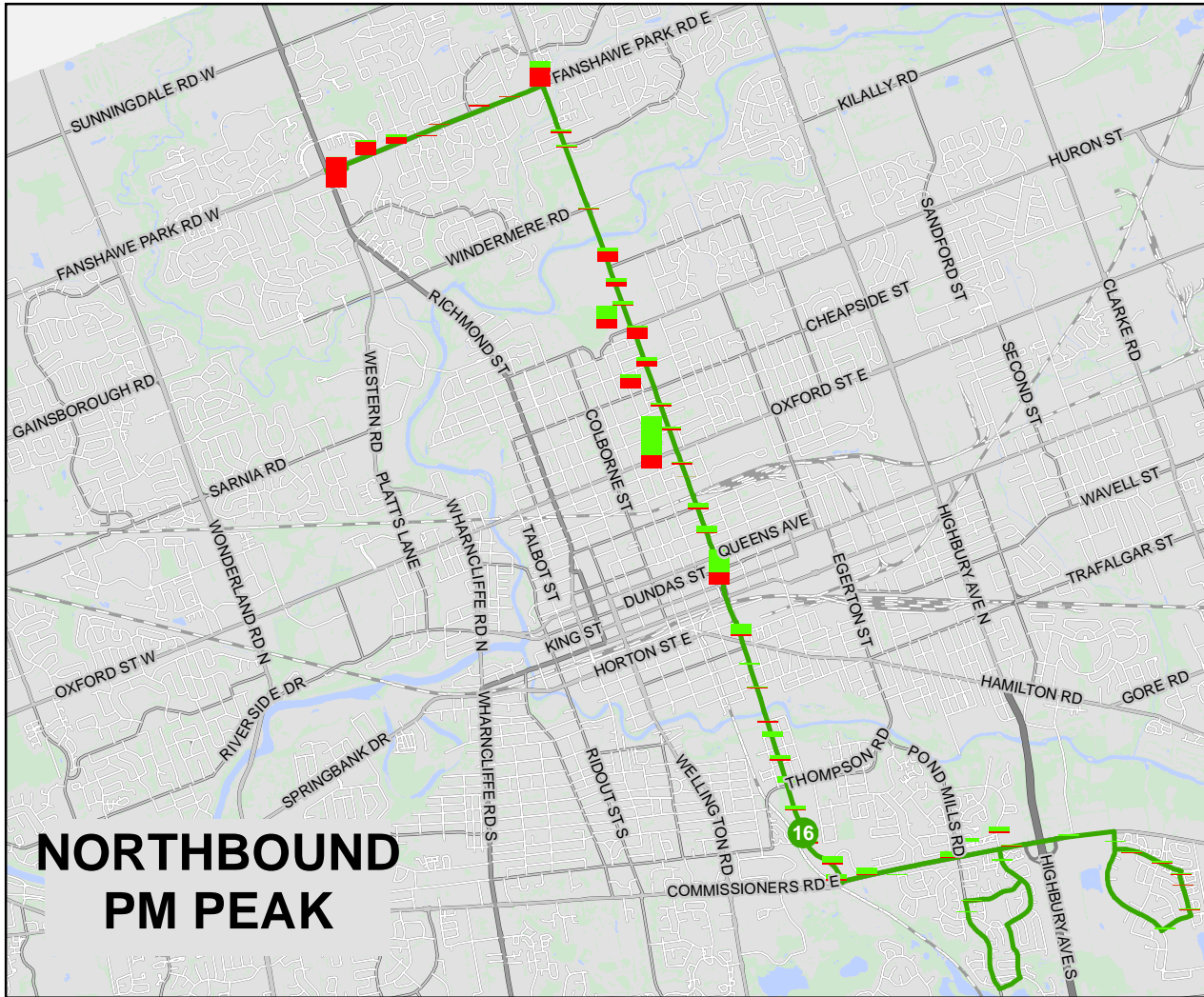


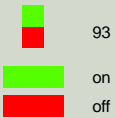
Figure 16 illustrates an example of the stop activity on Route 16 - Adelaide during various time periods. Route 16 Adelaide is a busy Base Arterial Route that travels the extent of the Adelaide corridor. The corridor connects Masonville Mall (a designated Transit Village) with several key destinations and transfer points along the corridor (e.g. Oxford Street and Dundas Street). The data shows concentrations of stop activity at major intersections along the corridor including Dundas Street, Oxford Street, Huron Street and Masonville Mall. This data suggests that Adelaide Street may be a candidate for an express route.





LONDON TRANSIT ROUTE REVIEW

ROUTE 16 ADELAIDE 2014 STOP ACTIVITY  
FIGURE 16



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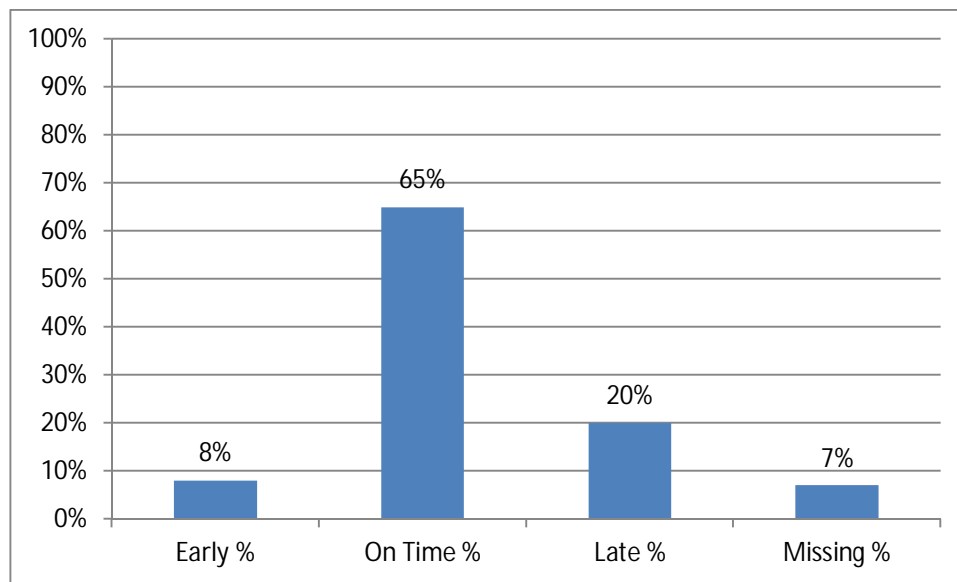


## 6.10 On-Time Performance

On-time performance of London Transit buses is imperative to ensure a high level of customer satisfaction. In particular, buses that arrive late at terminals that facilitate transfers mean some transit users may miss connections.

London Transit's existing service standard indicates that buses should be on-time 95% of the time. The on-time standard is defined as being not early and no more than three minutes late based on the published scheduled departures from timing points. Schedule adherence data was received from London Transit. A sample of Fall 2014 data was assessed. The results are presented in Figure 17. As shown in the graph, London Transit buses are on time 65 percent of the time, while they are late 20 percent of the time.

Figure 17 – London Transit Fall 2014 Schedule On-Time Performance Sample



The routes with the highest occurrence of late or missing trips were assessed in more detail. These include:

- Route 91 Express – 32 percent late, 0 percent missing;
- Route 17 – Oxford West – 31 percent late, 4 percent missing;
- Route 19 – Oakridge - 31 percent late, 4 percent missing;
- Route 2 – Dundas - 26 percent late, 15 percent missing;
- Route 28 – Lambeth - 26 percent late, 6 percent missing;
- Route 20 – Cherryhill - 24 percent late, 10 percent missing;
- Route 35 – Argyle - 24 percent late, 1 percent missing;
- Route 9 – Whitehills - 22 percent late, 3 percent missing;
- Route 4 – Oxford East – 20 percent late, 1 percent missing;
- Route 13 – Wellington Rd – 20 percent late, 1 percent missing;

- Route 16 – Adelaide – 20 percent late, 0 percent missing; and
- Route 6 – Richmond - 18 percent late, 14 percent missing.

Late trips can occur for several reasons. Much of this is due to general traffic conditions or periodic incidents, overcrowding of buses and frequent stop activity. Many transit systems have moved to an on-time performance standard based with an acceptable target of 0 to 5 minutes late. This accounts for the variations in external activities that can cause a bus to be late. Schedule adherence issues were also noted in the review and recommendations made to adjust schedule times or routes where warranted to promote improved on-time performance.

### 6.11 Stop Density Analysis

As part of the service guideline review, standards were developed to guide bus stop placement. Minimum stop spacing was recommended for each route category (see Section 5.3.2 for the bus stop placement standards). The location and spacing of bus stops can have a direct impact on bus run times as well as on passenger walking distances to/from service. The placement of stops involves a tradeoff between passengers using a stop and those that are delayed each time the bus stops. Stop spacing can have a major impact on service reliability and passenger waiting times.

Stop density analysis was completed on the existing route structure to identify areas with a high concentration of stops. Routes with a high concentration of stops were reviewed to identify potential changes that may help improve reliability of the service without negative impacts on passengers. Table 18 presents a summary of the routes that do not meet the proposed standard. The results were taken into consideration during the development of the proposed route structure changes in Section 7.0.

It should be noted that a number of the routes with schedule adherence issues identified in Section 6.10 also have high stop densities that do not meet the proposed standard. This includes Route 2 - Dundas, Route 4 – Oxford East, Route 6 - Richmond, Route 9 - Whitehills, Route 20 - Cherryhill and Route 28 - Lambeth.

With the implementation of the recommended route structure and adoption of service standards, it is recommended that LTC revisit each of its routes and stops to meet average stop spacing standards.

Table 18 – Stop Density Assessment

Route	Direction	Stop Spacing Standard		Average Spacing (metres)	Meets Standard?	Additional Comments
		Min (metres)	Max (metres)			
2A – Dundas	Eastbound	250	400	225	No	There is a high volume of stops between Egerton and Highbury Street (165m stop spacing)
2A – Dundas	Westbound	250	400	251	Yes	
2B – Dundas	Eastbound	250	400	257	Yes	There is a high volume of stops between Quebec Street and Highbury Street (170m stop spacing)
2B – Dundas	Westbound	250	400	245	No	There is a high volume of stops between Egerton and Highbury Street (165m stop spacing)
3 – Hamilton Rd.	Eastbound	250	400	215	No	
3 – Hamilton Rd.	Westbound	250	400	195	No	
4A – Oxford East	Northbound	250	400	170	No	Average stop spacing on Richmond Street is 180m Average stop spacing along Ridout Street is 150m
4A – Oxford East	Southbound	250	400	199	No	
4B – Oxford East	Northbound	250	400	201	No	Average stop spacing on Richmond Street is 180m Average stop spacing along Ridout Street is 150m
4B – Oxford East	Southbound	250	400	167	No	
6 – Richmond	Northbound	250	400	225	No	
6 – Richmond	Southbound	250	400	204	No	
7 – Wavell	Eastbound	250	400	221	No	
7 – Wavell	Westbound	250	400	243	No	
9A - Whitehills	Northbound	200	400	189	No	
9A - Whitehills	Southbound	200	400	202	Yes	
9B - Whitehills	Northbound	200	400	202	Yes	
9B - Whitehills	Southbound	200	400	189	No	
12 – Wharncliffe South	Northbound	250	400	309	Yes	
12 – Wharncliffe South	Southbound	250	400	226	No	

Route	Direction	Stop Spacing Standard		Average Spacing (metres)	Meets Standard?	Additional Comments
		Min (metres)	Max (metres)			
13 Grenfell	Northbound	250	400	259	Yes	Average stop spacing on Richmond Street from Regent Street to the University is 150m
13 Grenfell	Southbound	250	400	239	No	
20 – Cherryhill	Eastbound	250	400	267	Yes	Average stop spacing between Curry Street and Highbury Avenue is 170m
20 – Cherryhill	Westbound	250	400	221	No	
22 – Trafalgar	Eastbound	250	400	243	No	
22 – Trafalgar	Westbound	250	400	254	Yes	
25 – Kilally	Northbound	200	400	407	No	
25 – Kilally	Southbound	200	400	335	Yes	
26 – Jalna West	Northbound	250	400	223	No	
26 – Jalna West	Southbound	250	400	253	Yes	
28 – Lambeth	Northbound	200	400	493	No	
28 – Lambeth	Southbound	200	400	521	No	
34 – Medway	Northbound	200	400	550	No	
34 – Medway	Southbound	200	400	462	No	
39 – Fanshawe West	Eastbound	250	400	933	No	
39 – Fanshawe West	Westbound	250	400	509	No	

## 7.0 RECOMMENDED PART 1 FIVE-YEAR NETWORK PLAN: WITHOUT RAPID TRANSIT

### 7.1 Guiding Principles and Objectives

The five year service plan for the Part 1 network was developed assuming no Rapid Transit network would be in place over the next five years. While the City of London is currently undertaking a Rapid Transit Environmental Assessment (EA), there are still a number of unknowns, including whether the EA will result in a favourable outcome for Rapid Transit and funding can be allocated through federal, provincial and municipal governments to build and operate the proposed Rapid Transit network. Even if approved and funded, there are still several unknowns including the timing of the proposed service, the technology chosen (Light Rail Transit versus Bus Rapid Transit) and the location of the corridors.

For these reasons, the Part 1 five-year service plan was developed assuming no Rapid Transit network was in place. Instead, the focus of the Part 1 Five-Year Service Plan was to address immediate concerns identified by customers, transit staff and community stakeholders and identify opportunities to enhance service today and continue to grow ridership and enhance the customer experience.

The review of existing services and consultation with the public revealed a number of key issues and opportunities to be addressed in the Part 1 Five-Year Transit Service Plan. These were translated into guiding statements which formed the basis of a number of recommendations included below:

1. Address Overcrowding and Missed Trips

Consultation with existing transit customers and several London Transit drivers revealed an issue of overcrowding and missed trips, particularly on routes that connect to Western University and Fanshawe College. A review of passenger loading was conducted on each route to further verify these issues. While the review identified a number of very busy route segments, none of the routes exceeded the peak load target suggesting chronic overcrowding and missed trips (as defined by the London Transit service standard). This does not suggest that overcrowding does not occur on specific trips which may result in periodic missed trips. Routes 27 – Fanshawe College, 20 - Cherryhill, 13 – Wellington Rd., 6 - Richmond and 10 - Wonderland were some of the most crowded routes identified in the network, particularly near the post-secondary institutions. One of the objectives of the five-year service plan is to address these issues, particularly as the student population at each of these institutions continues to grow.

2. Simplify the Network

London Transit operates a number of split tail or branch routes to maximize the effectiveness of the service. The benefit of split tail routes is that it allows lower density residential/employment areas at the extremities of routes to connect directly to a high frequency corridor without forcing a passenger to transfer. This helps 'right-size' the level of service so that higher density corridors receive a higher level of service while lower density neighbourhoods receive a lower

level of service. While split tail routes continue to be appropriate for London, there are certain routes in the network that provide too many variations or have very short route segments that are not linked with the operation of the entire route. Routes 10 - Wonderland and 2 - Dundas, for example, each have a short branch (10B and 2C) that functions independently of the main route. The review assessed the potential to separate these routes from the main route and create new routes.

3. Continue to Build on the Express Routes

London Transit has successfully introduced two Express Routes on Richmond/Wellington (Route 90) and Oxford (Route 91). The routes have been very successful in attracting ridership and achieving a high utilization in a short period of time. The reason for their success is the improvement in travel time for customers. From route end to end, Route 90 is 43 percent faster than riding Route 13 on the same corridor while Route 91 is 27 percent faster than riding Route 17 on the same corridor. Both Express Routes also replicate parts of the future Rapid Transit network in London and should help build ridership. One of the key objectives of the Part 1 plan was to identify opportunities to expand the Express Route network and build ridership through improved service levels and enhanced connectivity to Arterial and Local Routes.

4. Address Underperforming Routes and Route Segments

A primary component of the transit review was to assess each corridor and identify whether the 'right amount' of service is being provided. While the review identified areas in the City that require a higher service frequency to accommodate passenger demand, there are other areas where lower ridership on routes and route segments does not justify the high service levels provided. There are three examples of this that were assessed:

- a. *Underperforming Routes:* There are certain routes that do not meet the minimum target for ridership performance identified in London Transit's Service Standards (Section 8). Two examples include Route 8 - Riverside and Route 24 – Base Line. It is important that transit resources be effectively allocated to best meet the needs of existing and new transit customers. This is assessed by measuring the number of passenger boardings that occur per hour of revenue service provided. When ridership on a route does not meet the target set for this measure of effectiveness, there is a need to adjust the service by reducing the service hours allocated to the route or modifying the route to try to attract more ridership.
- b. *Duplication of Service:* Certain corridors were identified that have two or more routes providing duplicate service. While in certain instances duplication is positive (e.g. on high demand corridors) or cannot be avoided (e.g. where there are limited road connections that lead to a major destination), there are other instances where duplication is not an effective use of transit resources. The level of ridership on corridors with duplicate services was assessed relative to the amount of service provided to better understand if such high service levels are required to accommodate

demand. Where duplication was found to be an ineffective use of resources and could be avoided, the objective was to identify opportunities to restructure one of the routes to reduce the level of duplication. Two examples include the Dundas corridor east of the downtown (Route 2 - Dundas, Route 7 - Wavell and Route 22 - Trafalgar) and the Commissioners Road corridor east of Adelaide Street (Route 16 - Adelaide and Route 24 – Base Line).

- c. *Unbalanced Routes:* There are a number of routes in the system that span large areas of the City. The benefit of long corridor routes is that they minimize the need for passengers to transfer when travelling long distances. The challenge with long routes is that ridership is often unequally distributed throughout the route while the service level is planned for the busiest part of the route. This can result in large segments providing 'too much' service for the level of ridership accommodated (i.e. an ineffective use of resources). This was found on a number of Arterial Routes that connect to Western University. On Routes 2 - Dundas and 6 - Richmond, for example, the demand for service between the downtown and the University is 3-4 times the demand of the route segments east and south of the downtown. London Transit understands this issue and has responded with the use of split-tail or branch routes. A key objective of the review was to identify other opportunities to balance the level of service provided on the route to better match the overall demand.
5. **Improve Weekend and Late Evening Service**  
A key issue heard from transit customers and the general public is lack of late evening weekday and weekend service, with a particular focus on Sundays. There are a number of transit routes that do not operate during these periods while others that operate very infrequently (60 minute headway). Evening and weekday service traditionally attracts less ridership compared to weekday peak and base periods. This is partially due to the nature of trips that occur during evenings and weekends compared to weekday travel (more recreational trips and fewer work and school trips). Table 19 below illustrates the number of daily service hours provided on a typical weekday, Saturday and Sunday and the ridership using the system during those same days.

Table 19 – Service Levels and Ridership by Day of Week

Day of Week	Ridership	Service Hours	Boardings /Rev Veh Hour	% of Weekday	
				Ridership	Service Hours
Weekday	106,649	1,847	57.74	100%	100%
Saturday	55,212	1,190	46.40	52%	64%
Sunday	33,503	603	55.58	31%	33%

As illustrated, London Transit offers considerably less service on Saturdays and Sundays than on the average weekday and subsequently both service days receive lower passenger boardings.



What's interesting to note is that the productivity on weekends continues to remain high, particularly on Sundays which is nearly as high as on an average weekday. This suggests that the level of service provided is low and there is some pent up demand that could be accommodated if service levels were to improve. Therefore a big focus of the service plan is to provide a standard level of reasonable service during the off-peak periods that improves proximity to transit and provides an acceptable level of service (targeting 30 minute headway or better where the service improvement meets the productivity target).

6. Provide Direct Connections between Major Origins and Destinations

A key objective is to enhance connectivity in the system, particularly where passenger transfers can be minimized. Transit routes always function better when they connect two or more major destinations, particularly if each is located on either end of the route. This helps balance the service and provide more two-way travel, making better use of an existing resource. Routes were assessed to identify connection opportunities outside of the downtown. Particular emphasis was paid to connections to post-secondary institutions and future Transit Villages that may have a Rapid Transit connection.

7. Minimize Impacts on Existing Passengers

Change is always difficult and can have an impact on existing passengers. Ridership patterns have often been established for quite some time and change geared towards the greater good can sometimes be negative to existing passengers. Where route modification or service level changes were proposed, care was taken to reduce the number of passengers negatively impacted by the change.

8. Enhance Overall Service Levels

The transit mode share target identified in the City of London's Transportation Master Plan identifies a need to significantly grow transit ridership over the next 20 plus years. To attract new customers and respond to growing population and employment in the City, enhancements to the transit system are required to capture a larger share of transportation demand. The Part 1 Five-Year Service Plan was structured around a certain level of growth in service hours and peak period buses per year. This was identified in the 2015 - 2024 Capital Budget Program produced by London Transit which identified a need to expand service on an annual basis to accommodate projected growth in ridership and to address service issues. Table 20 identifies the maximum number of service hours and new vehicle purchases that was used as a guideline in the development of the Part 1 Five-Year Service Plan.

Table 20 – Maximum Service Hour and Capital Bus Purchase Expansion by Year

Maximum Expansion	2015	2016	2017	2018	2019
New Revenue Service Hours	17,700	17,700	17,700	17,700	17,700
New Buses Purchases	6	6	5	6	5

## 9. Build on a Frequent Transit Network and Strategic Corridors

As part of the Part 1 assessment, a Frequent Transit Network was identified based on the existing demand along each of the transit corridors. A Frequent Transit Network is defined as that portion of the network on which service is operated at a frequency that eliminates the need for passengers to plan their trips around a published timetable. This typically means a frequency of every 10 minutes or better throughout the day. The corridor can be served by a single route or by multiple transit routes to provide the required frequency. The existing load profile data was used to identify the segments for the Frequent Transit Network.

In addition, existing planning objectives were reviewed to identify other Strategic Corridors that would complement the Frequent Transit Network. Strategic Corridors were identified as corridors that:

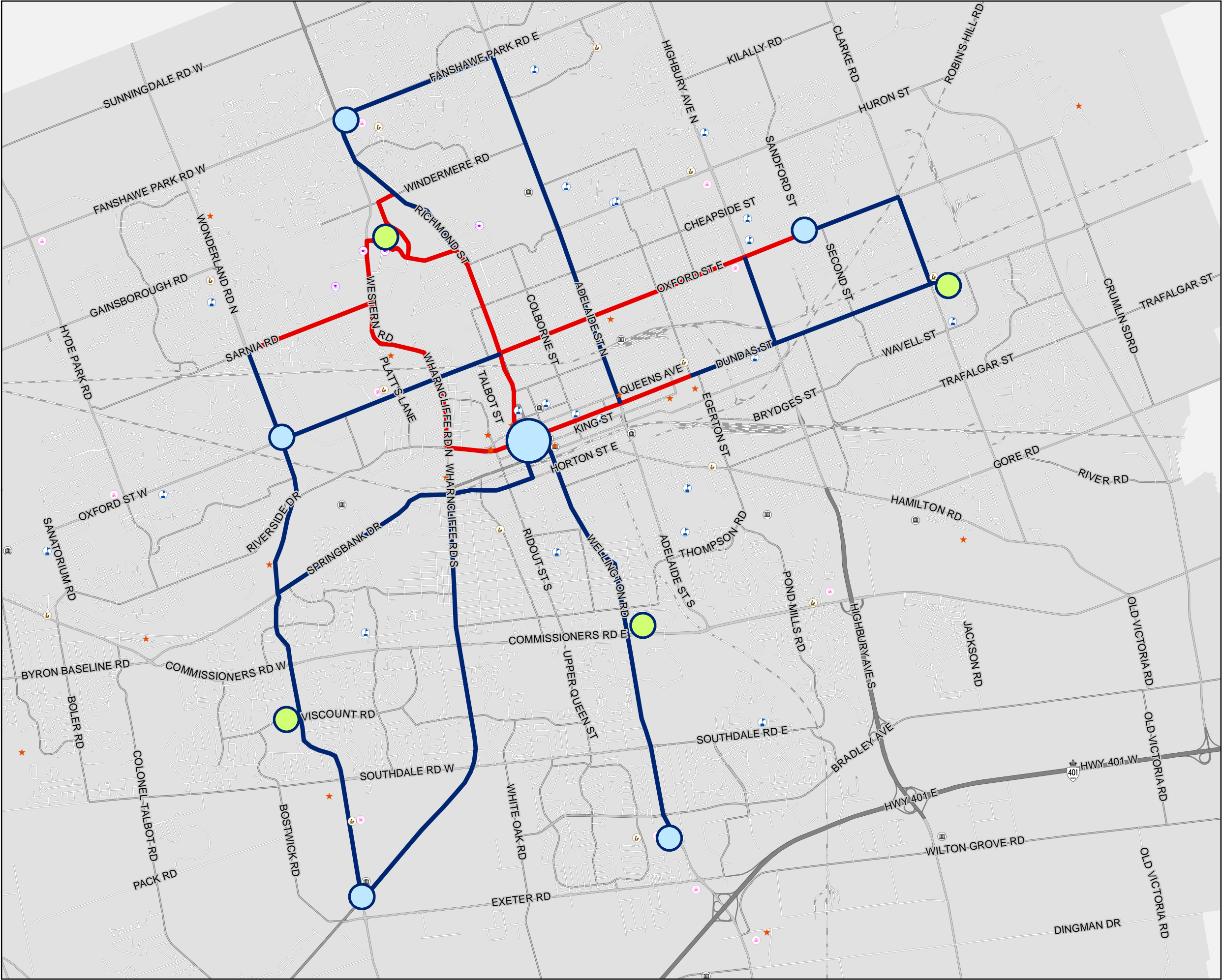
- Connect to major destinations and/or future Transit Villages as identified in the London Plan;
- Are designated as Rapid Transit or Urban Corridors in the London Plan (with a focus on transit supportive land use and intensification).

Figure 18 illustrates the proposed Frequent Transit Network and supporting Strategic Corridors. The identification of these strategic level corridors was used to help identify route and service level modifications.

## 7.2 Network Design Approach

Based on the guiding principles identified above, including the identification of a Frequent Transit Network and supporting Strategic Corridors, two alternative route structure philosophies were evaluated to determine a transit network approach preferred by London Transit.

The first type of network evaluated was a grid network. Grid networks structure routes in a rectilinear grid, in which transit routes follow the north-south/east-west pattern of perpendicular streets. The grid network reduces the downtown focus and provides direct service along major arterial corridors. This necessitates transfers by passengers destined to areas not directly served by the route the passenger boarded. Local areas outside of the grid network are serviced by 'feeder routes' which connect residential neighbourhoods to the grid network.



LONDON TRANSIT ROUTE REVIEW

FREQUENT TRANSIT NETWORK AND STRATEGIC CORRIDORS

FIGURE 18

- Attraction
- City Facility
- Post Secondary School
- High School
- Library
- Shopping Centre
- Proposed Frequent Transit Network
- Strategic Corridors
- Transit Villages
- Major Destination



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The second type of network evaluated was the modified radial network. In a modified radial network, all or most transit lines converge on major destinations (e.g. Downtown, post-secondary institutions, shopping centres). While routes are planned where possible to be direct, modified radial systems are not as focused on the grid system but instead focused on major destinations. Travelers on any route may access these destinations directly, without the need for a transfer. Moreover, they can reach any major destination on the network with just a single transfer. The challenge with the modified radial network is that passengers not destined to the major destinations may experience some out-of-direction travel to reach their destination.

London Transit currently operates a modified radial system with the focus on downtown, Western University, Fanshawe College and other major terminals throughout the network. For passengers destined to these locations, the routes can be fairly direct.

Planning for the next five years, both network design approaches were evaluated for London. Figure 19 presents a conceptual grid based network while Figure 20 presents a conceptual modified radial network. Given that the grid network provides more coverage than a radial network, local routes were added to the radial network concept in order to ensure similar network coverages were being compared. Table 21 presents a comparison of both networks.

Table 21 – Modified Radial Network and Grid Based Network Comparison

Criteria	Modified Radial Network	Grid Based Network
Walking Distance (coverage)	Not as many people within walking distance of high frequency corridor	Reduced walking distance to high frequency service
Direct Travel	More direct travel to major destinations; less direct to other destinations	More direct travel to destinations outside of the downtown and post-secondary institutions
Need to Transfer	Reduced need to transfer: most trips require 1 or less transfers	Increase need to transfer: up to 3 transfers required on certain trips
Effective Allocation of Resources	More effective use of resources: High frequency service focused on frequent transit network and strategic corridors	Ineffective use of resources on a number of corridors that do not justify high frequency service
Alignment with Intensification Corridors and Nodes	Aligns with rapid transit and urban corridors in the London Plan	High frequency services on a number of corridors that have low densities and are not transit supportive
Operating Cost	Strategic Transit Network (high frequency and future high frequency) requires approximately 51% of 2014 service hours)	Grid network alone requires approximately 70% of 2014 service hours (12 routes)

An evaluation of both network options was completed. While the grid network provides more corridors with high frequency service, it was felt that the existing modified radial structure was more effective for London.

There are many origin/destination pairs in London which would require multiple transfers in a grid route structure, and transfers are perhaps the greatest disincentive to people who might choose public transit over alternative modes. The frequency of service is a key consideration for the effectiveness of transfers in a grid system. During periods with 30 minute or greater service (evenings and weekends), the average wait at arterial transfer locations would be 15 minutes. Without timed transfers and considering adverse weather conditions, the level of customer service would be significantly reduced for many users.

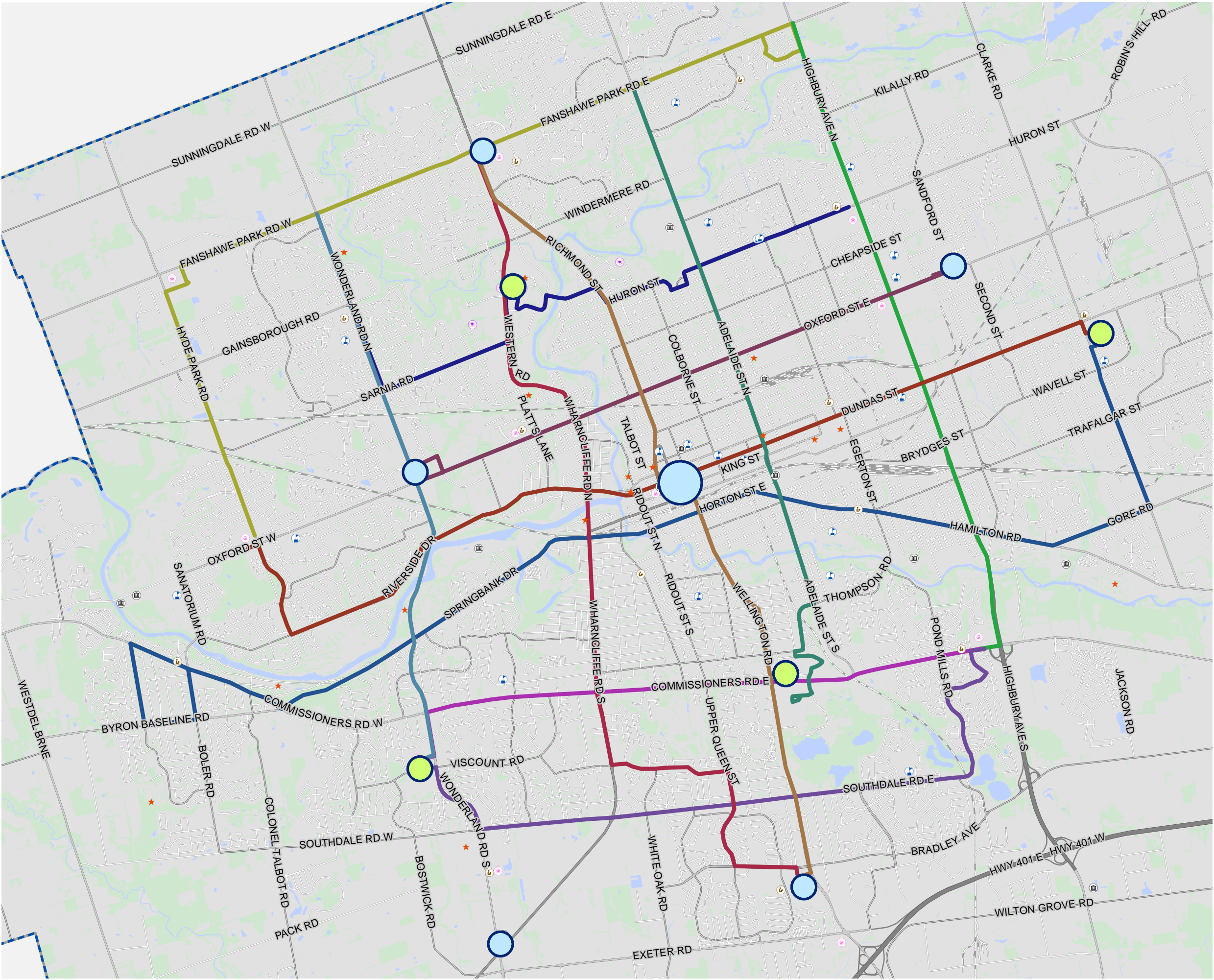
To combat this, grid networks typically promote a maximum headway of 10-15 minutes on each grid route. This minimizes transfer waiting time for passengers. For certain corridors (e.g. Richmond and Dundas), this level of service frequency is reasonable. However, other arterial corridors are more automobile focused and have limited destination on them to attract transit trips (e.g. Highbury, Fanshawe Park Road, Southdale Road). For these routes, a 10-15 minute frequency service would be fairly unproductive and not be an adequate use of system resources. These service level requirements were compared with a modified radial system. To achieve a 10 -15 minute frequency on all grid routes defined in Figure 19, 70 percent of existing system service hours would be spent on those routes, leaving only 30 percent to be spent on supporting feeder/local routes. Alternatively, in the modified radial network, only 51 percent of existing service hours would be spent on the same corridors, leaving 49 percent to be allocated to other priority areas in the network.

For these reasons, the continuation of a modified radial network was selected as the preferred strategy to base the Part 1 service plan on.

The Part 1 Five-Year Service Plan that follows is based on the above guiding principles and need to address issues and opportunities identified by the public, transit customers and transit staff. The recommended service plan also takes direction from the revised service standards document (Section 5.0). The strategy identifies easy to implement quick-wins that can be completed in the short-term and responds to pressures faced from a growing clientele. The recommendations are split into three areas of improvement:

- New and Restructured Routes;
- Improvements to Weekday Peak Period Services; and
- Improvements to Weekday Off-Peak and Weekend Services.



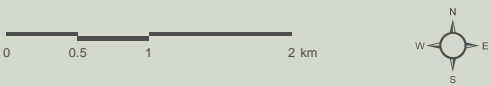


LONDON TRANSIT ROUTE REVIEW

PROPOSED STRATEGIC GRID ROUTE STRUCTURE

FIGURE 19

- ★ Attraction
- City Facility
- Post Secondary School
- High School
- Library
- Shopping Centre
- Route
- Adelaide
- Commissioners
- Dundas - Riverside
- Fanshawe
- Hamilton-Springbank
- Highbury
- Huron - Western
- Oxford
- Richmond-Wellington
- Southdale
- Wharnclyffe
- Wonderland
- Municipal Boundary
- Transit Villages
- Major Destination



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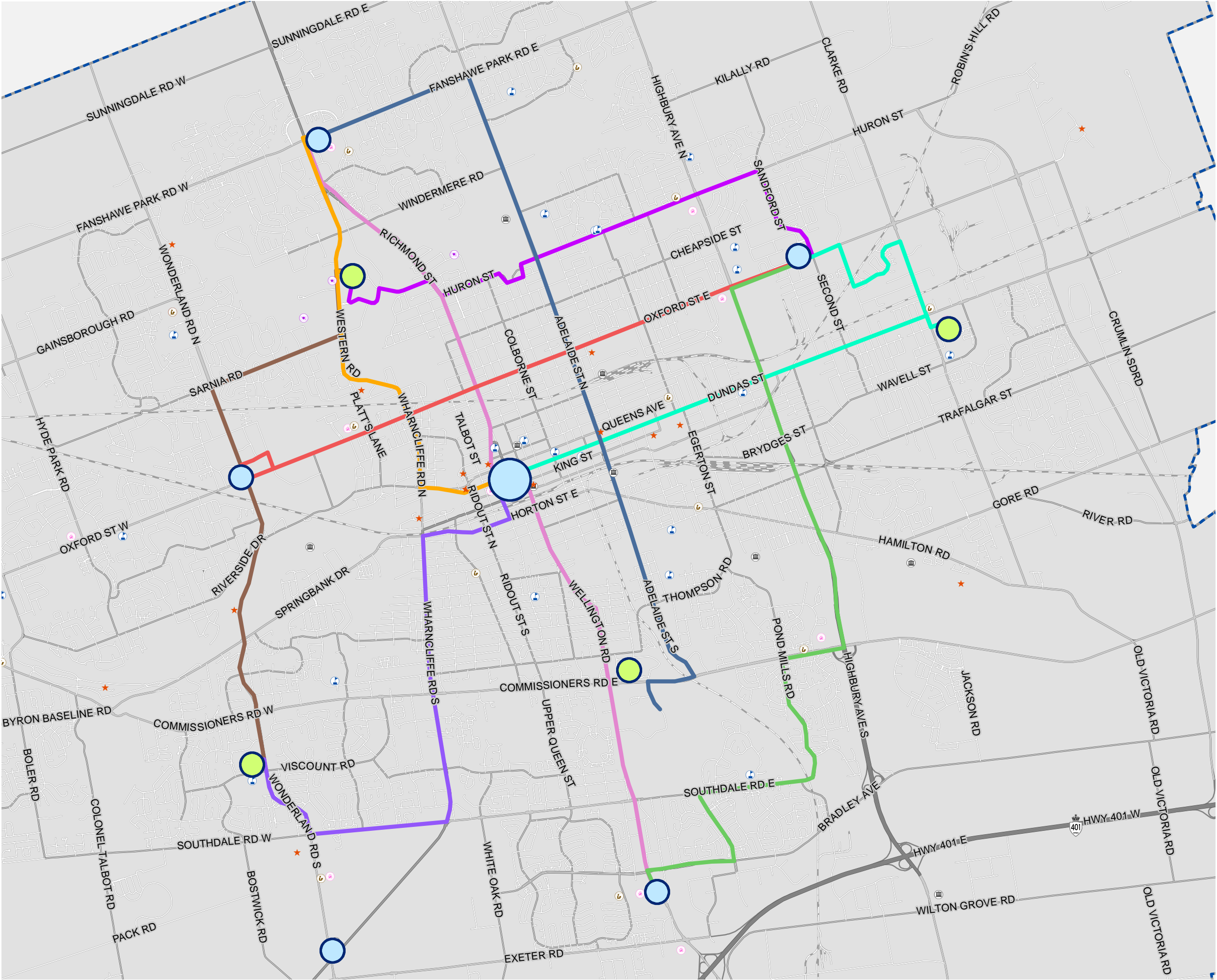
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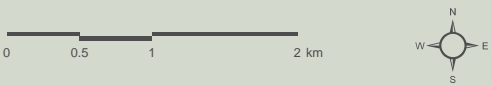


LONDON TRANSIT ROUTE REVIEW

PROPOSED STRATEGIC RADIAL ROUTE STRUCTURE

FIGURE 20

- ★ Attraction
- City Facility
- Post Secondary School
- High School
- Library
- Shopping Centre
- Municipal Boundary
- Route**
- Adelaide
- Dundas
- Highbury
- Huron
- Oxford
- Richmond - Wellington
- Western - Riverside
- Wharnccliffe
- Wonderland
- Transit Villages
- Major Destination



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### 7.3 Recommended Route Alignments

The following section of the report describes the recommended service strategy for the Part 1 five-year service plan. The service plan includes recommendations to the overall route structure in line with the existing modified radial network concept, service level recommendations (frequency modifications) and recommendations to the overall span of service.

The recommended five year service plan builds on the existing base arterial network. These routes provide direct connections to major destinations and future Transit Villages on routes that provide high frequency service. The majority of base arterial routes form part of the Frequent Transit Network and Strategic Corridors identified in Section 7.1. Slight modifications were made to Route 17 – Oxford West, Route 2 - Dundas and Route 13 – Wellington Rd. to permit service level enhancements on the corridor segments with the highest demands.

One of the primary objectives of the Part 1 service plan was to identify opportunities to better utilize existing resources and reinvest underutilized service hours back into the system. There were three types of service improvements that were made to accomplish this objective.

1. Underperforming routes which do not meet the proposed service standards were assessed and recommendations made to grow ridership or reduce the level of service provided. Routes 8 - Riverside, 24 – Base Line and 28 - Lambeth do not meet existing productivity standards and recommendations were made to improve performance.
2. Routes that provide duplicate service were also assessed to identify opportunities to better utilize existing resources. Routes 24 – Base Line and 16 - Adelaide provide duplicate service on Commissioners Road east of Adelaide Street while Routes 2 - Dundas, 7 - Wavell and 20 - Cherryhill provide duplicate service on Dundas Street east of the downtown. Modifications to the route structure were recommended to make better use of existing resources.
3. Passenger load profiles were also examined on existing routes to determine if too much service was being provided along certain segments of each route. In many instances, high frequencies on routes are planned to accommodate the peak demand point on the route. This results in an ineffective use of resources along the peripheral segments of the route, where ridership demand does not warrant the high level of service provided along the core of the route. Many base arterial routes were adjusted with branch routes created to help 'right-size' the route. Split tail routes are recommended for a number of these routes including Route 2 - Dundas, 4 – Oxford East, 6 - Richmond, 13 – Wellington Rd. and 17 – Oxford West.

The overall service adjustments described above resulted in an overall savings of 43,950 annual revenue service hours and 12 peak buses. These resources were reinvested back into the system over the five year plan with the following objectives:

- Improve connectivity to major destinations and transit villages, including potential connections to the proposed Rapid Transit network;

- Address real and perceived crowding issues on busy routes;
- Reduce peak period headways, particularly along the Frequent Transit Network; and
- Improve off-peak service levels, particularly where service operates at a 60 minute headway or not at all.

The section below provides a more detailed assessment and recommendations to individual routes. The accumulation of these individual routes forms the recommended 2019 route structure. This is illustrated in Figure 21. It should be noted that 78 percent of the population and employees continues to be within a 400 metre walk of a transit stop. This is similar to the existing route structure. To meet the 85 percent target over the next five years, it is recommended that the City of London Planning Department continue to promote development opportunities within a 400 metre walking distance of a transit stop, particularly along a high frequency corridor.

### *Route 24 – Base Line*

#### Description of Service / Issues

Route 24 – Base Line is an east-west crosstown route south of downtown that connects Westmount Mall with the Victoria Hospital and Summerside community. The route does not meet existing productivity standards of 25 boardings per revenue vehicle hour during the weekday peak and 20 boardings per revenue vehicle hour during the weekday off-peak (existing weekday peak is 24 boardings per revenue vehicle hour and the weekday off-peak is 14 boardings per revenue vehicle hour). Ridership is particularly low along Commissioners Road east of the Victoria Hospital where the route is duplicated by Route 16 – Adelaide. During the peak periods, the route has challenges maintaining the schedule. This is particularly true during the PM peak periods. As a result, LTC increased the overall round trip travel time on the route to 70 minutes with a 35 minute headway.

There is a growing demand for service to the new power centre and residential community located at the southeast corner of Colonel Talbot Road and Southdale Road.

The proposed route modifications address the underperformance and duplication of service along this route and expand the service to a growing area that is currently not serviced by transit. See Figure 22 for the proposed change.

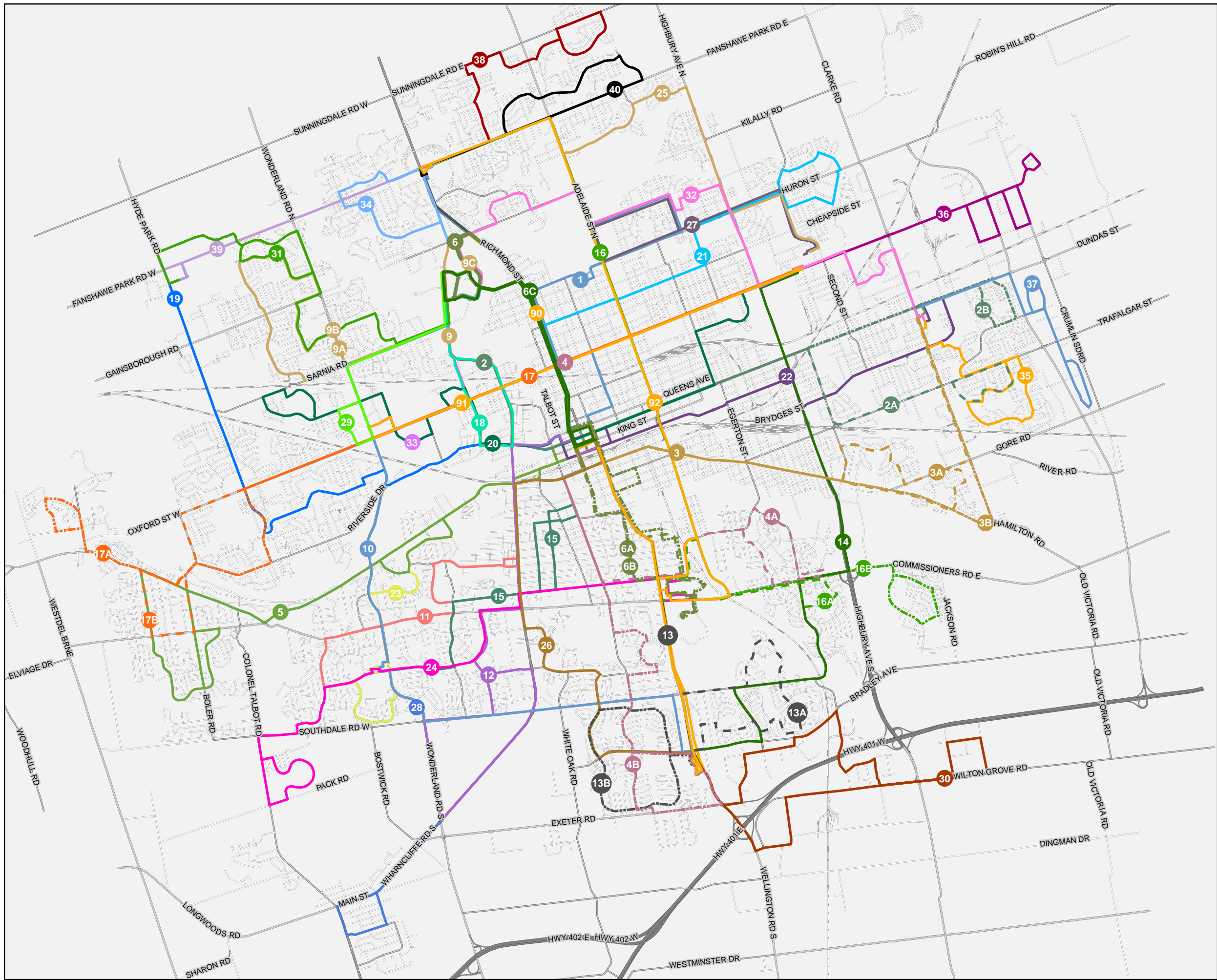
#### Recommendation

1. Re-structure route to:
  1. Eliminate service on Commissioners Road east of Victoria Hospital;
  2. Extend service west of Westmount Mall along Viscount Road and Cranbrook Road to the new power centre and residential neighbourhood at the southeast corner of Colonel Talbot Road and Southdale Road (along Settlement Trail).
2. Improve PM Peak period headway from 35 minutes to 30 minutes.

#### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 0
- New Bus Purchase Requirements: 0





LONDON TRANSIT ROUTE REVIEW

2019 RECOMMENDED SERVICE PLAN  
FIGURE 21

Transit Route

0 0.25 0.5 1 km

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### Impacts

Passengers on the eliminated portion of route east of Victoria Hospital can use Route 16 - Adelaide to access various destinations within the City. Residents in the Summerside neighbourhood will no longer have direct access to the Victoria Hospital or the Wellington corridor and will be required to use Route 16 - Adelaide for east-west travel along Commissioner Road. The route modification will shorten the overall travel time and allow the route to maintain better schedule adherence. The expansion of transit to a previously unserved area is expected to increase ridership and help the route meet minimum performance standards.

### *Route 28 – Lambeth*

#### Description of Service / Issues

Route 28 - Lambeth is a local route that connects the Lambeth community to Westmount Mall. The route does not meet existing productivity standards of 20 boarding per revenue vehicle hour during the weekday peak (existing weekday peak is 15 boardings per revenue vehicle hour). The route also currently has consistent schedule adherence issues, particularly during the weekday peak periods. The majority of passengers from Lambeth that use the route are destined to the downtown area. The existing route structure requires passengers to transfer at Westmount Mall to access other destinations in the city.

The proposed recommendation addresses the schedule adherence issues. See Figure 22 for the proposed change.

#### Recommendation

1. Shorten route in Lambeth to address schedule adherence issues (remove service on Outer Drive) Travelling south on Campbell Street, the route would turn west on Sunray Avenue and north on Colonel Talbot Road, continuing along the same path.

#### Service Hour and Vehicle Requirements

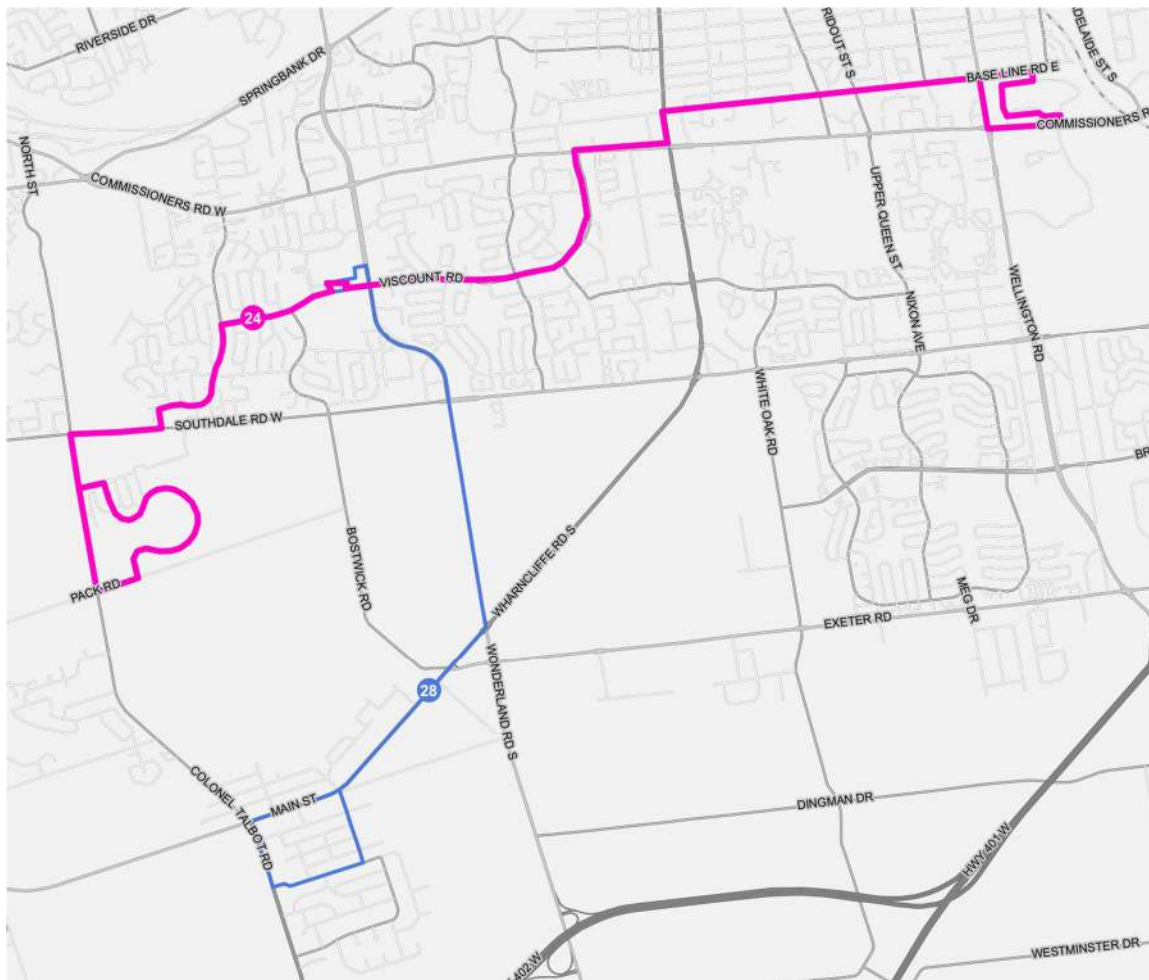
- Annual Service Hour Requirements: 0
- New Bus Purchase Requirements: 0

### Impacts

The routing change will address the schedule adherence problems on the route by shortening the round trip travel time by approximately two minutes. Service is removed from Outer Drive. This will impact approximately 15 daily weekday passengers. The majority of impacted passengers continue to be within 400m walking distance of the route.

It should be noted that the proposed service change does not address the underperformance issues as stated in the proposed service standards (boardings per revenue vehicle hour). It is recommended that London Transit continue to identify opportunities to address underperformance and increase ridership.

Figure 22 – Recommended Route 24 and 28 Modification



### *Route 2A/B/C - Dundas*

#### Description of Service / Issues

Route 2A/B - Dundas is an east-west route that runs along the Dundas corridor from Western University in the west (via Western Road) to Argyle Mall and the Trafalgar Heights neighbourhood to the east. The route split-tails at Argyle Mall providing two branches into the Trafalgar Heights residential neighbourhood.

Route 2C - Dundas is a short-turn loop that runs from Western University south to Western Road/Warncliffe Road, Riverside Drive and back up Woodward Avenue/Platts Lane. The route is designed to accommodate students attending Western University. While 2C - Dundas is grouped in with 2A/B - Dundas, it essentially operates as a separate route with only a small portion of the route overlapping the main trunk line. The route also does not operate on Dundas Street, which may cause some confusion among passengers regarding the route name.

This route is one of the highest performing routes in the system. The boardings per revenue vehicle hour exceed the proposed service standards during all time period. The route also has the highest number of

passenger complaints about overcrowding. Demand on the route significantly drops east of Highbury Avenue, suggesting that a 10 minute peak period headway may not be warranted.

Proposed changes to this route help simplify the network, address the unbalanced demand and duplication of service. See Figure 23 for the proposed Route 2A/B/C - Dundas modification.

### Recommendations

1. Separate Route 2C - Dundas from 2A/B - Dundas and create a separate route name and number.
2. Reduce headway on Route 2C from 6 min to 5 min from 8:00am to 9:00am and from 2:00pm to 6:00pm.
3. Restructure Route 2A/B - Dundas to:
  - a. Revise the split tail portion of Route 2A/B - Dundas to branch at Hale Street. No change is proposed to Route 2B (continue east on Dundas to the Argyle Mall terminal, then east on Dundas to Bonaventure Drive, south on Bonaventure Drive, west on Admiral Drive, north on Carlyle Drive and west on Dundas Street back to Argyle Mall. Route 2A - Dundas would head south on Hale Street, east on Trafalgar Street, south on Marconi Boulevard, east on Noel Avenue/Hudson Drive, west on Trafalgar Street and back to Highbury Avenue and Dundas Street.
  - b. Reduce headway from 30 min to 20 min from 7:00am to 9:00am and 2:00pm to 6:00pm (Summer period).

### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 2,054 (due to frequency improvement)
- New Bus Purchase Requirements: 1 (due to frequency improvement)

### Impacts

The proposed change to Route 2C - Dundas will make it easier for passengers to understand schedules (proposed to be called Route 18 – Western Road).

Passengers on Dundas between Highbury Avenue and Clarke Road will see a reduced frequency during all operating periods (e.g. 20 minute headway from 10 minute during the peak periods). However, the existing ridership profile can be accommodated with the reduced level of service.

Passengers on Trafalgar Street between Highbury Avenue and Clarke Road will see an improved level of service, including the introduction of service during the late weekday and Saturday evenings, early Saturday and all day Sunday. They will also receive an increase in frequency in the weekday peak period (20 minute headway from 30 minute headway) and on Saturday mornings and early evenings (30 minute headway from 20 minutes).

Passengers on Clarke Road, Trafalgar Street, Marconi Boulevard and Hudson Drive no longer have a direct connection to Argyle Mall. It is not known how many of these passengers are destined to Argyle Mall. The changes proposed for Route 35 - Argyle will address most of these concerns.

## *Route 22 - Trafalgar / Route 7 - Wavell*

### Description of Service / Issues

Route 22 - Trafalgar and Route 7 - Wavell provide parallel service to the Dundas corridor with connections to Argyle Mall. Route 7 - Wavell is an east-west route that runs along the Dundas corridor from downtown (via Dundas Street) to Highbury Avenue then along Wavell Street to Argyle Mall.

Half of Route 7 - Wavell operates along Dundas Street duplicating Route 2 - Dundas to Highbury Avenue and Route 20 to Quebec Street. With Route 7 - Wavell, Route 2 - Dundas and Route 20 - Cherryhill running along this portion of Dundas Street, there is a combined 5 minute headway during the peak periods. Based on a review of the existing load profile, the 10 minute peak period headway provided by Route 2 - Dundas is more than adequate to serve existing demand and future ridership growth along the Dundas corridor between downtown and Quebec Street.

Route 22 - Trafalgar is an east-west route that runs along York Street, Florence Street and Trafalgar Street from downtown to Argyle Mall. There are no issues reported along this route.

Proposed changes to these routes help address duplication of service while maintaining adequate service levels. See Figure 23 for the recommended Route 22 - Trafalgar/Route 7 - Wavell modification.

### Recommendations

1. Eliminate Route 7 - Wavell.
2. Restructure Route 22 - Trafalgar east of Highbury Avenue to travel south on Highbury Avenue, east on Brydges Street to Wavell Street, west on Dundas Street to Argyle Mall. The route would assume the alignment of Route 7 - Wavell to Argyle Mall.
3. Increase service hours on Route 22 - Trafalgar to provide service on weekday evenings, early Saturday morning, late Saturday evening and on Sunday.
4. Operate a 30 minute headway on Route 22 - Trafalgar on weekday evenings and late Saturday evening and all day Sunday. Operate a 60 minute headway early Saturday morning.

### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: -7,814
- New Bus Purchase Requirements: -3
- *Note: Represents a net savings including the improvements to Route 22 - Trafalgar*

### Impacts

With the elimination of Route 7 - Wavell and the modification of Route 2A - Dundas, the re-alignment of Route 22 - Trafalgar to Wavell Street will provide the necessary coverage in the residential area west of Argyle Mall. The change will not eliminate service to any passengers. This service change works in conjunction with the proposed changes to Route 2A - Dundas to ensure minimal impacts on existing passengers.

Passengers on York Street and Florence Street will see an increase in service with the introduction of service during weekday and Saturday evenings, early Saturday and all day Sunday. The service hours saved with this modification will be reinvested back into the system to meet other system objectives.

### *Route 35 - Argyle*

#### Description of Service / Issues

Route 35 - Argyle is a local residential collector route connecting residents in Trafalgar Heights to Argyle Mall. The route is one of the poorer performing routes in its route classification, however, does exceed the proposed productivity service standard for all time periods. With the proposed changes to Route 2A - Dundas, residents along Trafalgar Street (east of Clarke Road), Marconi Boulevard and Hudson Drive no longer have a connection to Argyle Mall. There is an opportunity to re-align the route to ensure residents have a direct connection to Argyle Mall.

The proposed change ensures that overall service levels are maintained and impacts on existing passengers are minimized. See Figure 24 for the recommended Route 35 - Argyle modification.

#### Recommendations

1. Restructure Route 35 - Argyle to travel from Admiral Drive to Trafalgar Street, south on Hudson Drive to Marconi Boulevard, north on Railton Avenue back to Trafalgar Street continue to Admiral Street to Argyle Mall.
2. Weekday - Introduce service from 6:00pm to 9:00pm (30 min headway).
3. Saturday - Introduce service from 5:00pm and 9:00pm (30 min headway).
4. Sunday - New service from 9:00am to 7:00pm (30 min headway).

#### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 1,404
- New Bus Purchase Requirements: 0



Figure 23 – Recommended Route 2A/B/C Modification



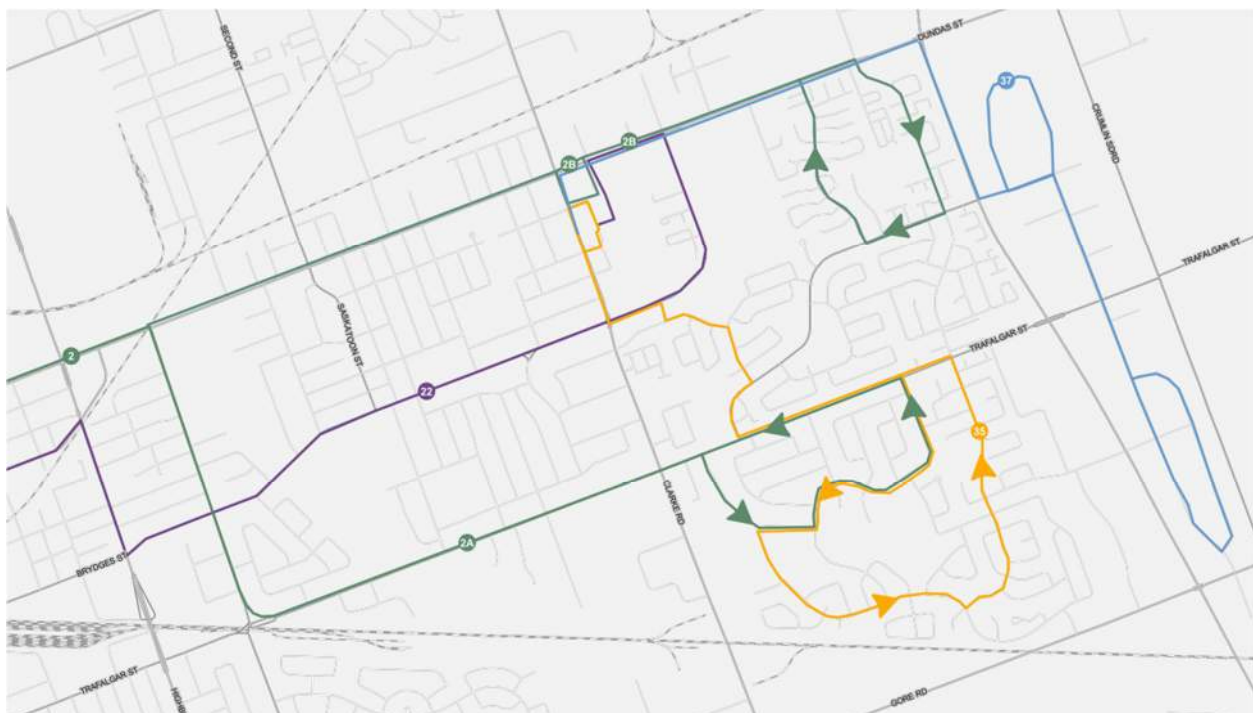
## Impacts

Passengers on Trafalgar Street (east of Clarke Road), Marconi Boulevard and Hudson Drive maintain a direct connection to Argyle Mall on weekdays and Saturday.

Existing users of Route 35 - Argyle on Admiral Drive and Bonaventure Drive are no longer within 400m of Route 35 - Argyle. This will impact approximately 61 daily weekday passengers. The average walking distance to Route 35 - Argyle for these passengers is now 600m.

Service is removed from a small portion of Marconi Boulevard and Weymouth Drive; however, passengers in the area are still within a 400m walking distance.

Figure 24 – Recommended Route 22/Route 7 Modifications



## *Route 17 – Oxford West / Route 8 -Riverside*

### Description of Service / Issues

Route 8 - Riverside is a local peak period service providing a connection from the Riverbend residential area to downtown. The route does not meet existing productivity standards of 20 boardings per revenue vehicle hour during the weekday peak (existing weekday peak is 16 boardings per revenue vehicle hour) and is subject to review.

Route 17 – Oxford West is a major arterial route that traverses Oxford Street north of the downtown core from Byron to the west to Clarke Road to the east. The demand along the route significantly drops off on either end of the route; west of Hyde Park Road and southeast of Fanshawe College. While the main corridor warrants a frequent service, this level of service is not warranted on either end of the

route. There is an opportunity to modify each end of the route to save service hours and improve connections.

The proposed change addresses the underperformance of Route 8 and balances demand along Route 17 – Oxford West while minimizing impacts on existing passengers. See Figure 25 for the proposed route modification.

### Recommendations

1. Eliminate Route 8 - Riverside.
2. Restructure Route 17 – Oxford West to operate the main local trunk from Fanshawe College to Hyde Park Road.
3. West End:
  - a. Revise the route to split at Hyde Park Road. Route 17A – Oxford West would travel south on Hyde Park Road, west on Riverside Drive and Commissioners Road and loop around Riverbend before continuing back on the same route. Route 17B – Oxford West would operate the same as the existing Route 17 – Oxford West does west of Hyde Park Road. The split tails would operate during the weekday AM and PM peak periods providing a 40 minute frequency on each branch and maintaining the 20 minute service along the busiest portion of the corridor.
  - b. During the off peak periods, Route 17 – Oxford West would operate as it normally does from Byron and end at Fanshawe College.
4. East End: Terminate the route at Fanshawe College.

### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: -4,588
- New Bus Purchase Requirements: -1

### Impacts

Passengers on the west end of the route in Byron will see a reduction in frequency during the peak periods, from a 20 minute to 40 minute headway. The reduction in service will provide a poorer level of service, but is more aligned with passenger demand in this area. This will only impact passengers that are not within walking distance of Commissioners Road. Byron passengers still have the option to use Route 5 - Springbank to access the downtown and other destinations in the network.

Riverbend residents will see a reduction in frequency from 30 minutes to 40 minutes with the removal of Route 8 - Riverside. These passengers that are destined to the downtown will also require a transfer at Richmond Street. Buses on Richmond Street connecting to the downtown are very frequent during the peak periods, requiring minimal transfer time on the inbound trip. Ridership in the Riverbend neighbourhood is very limited and does not meet minimum ridership performance standards. The modification allows service to continue to this neighbourhood.

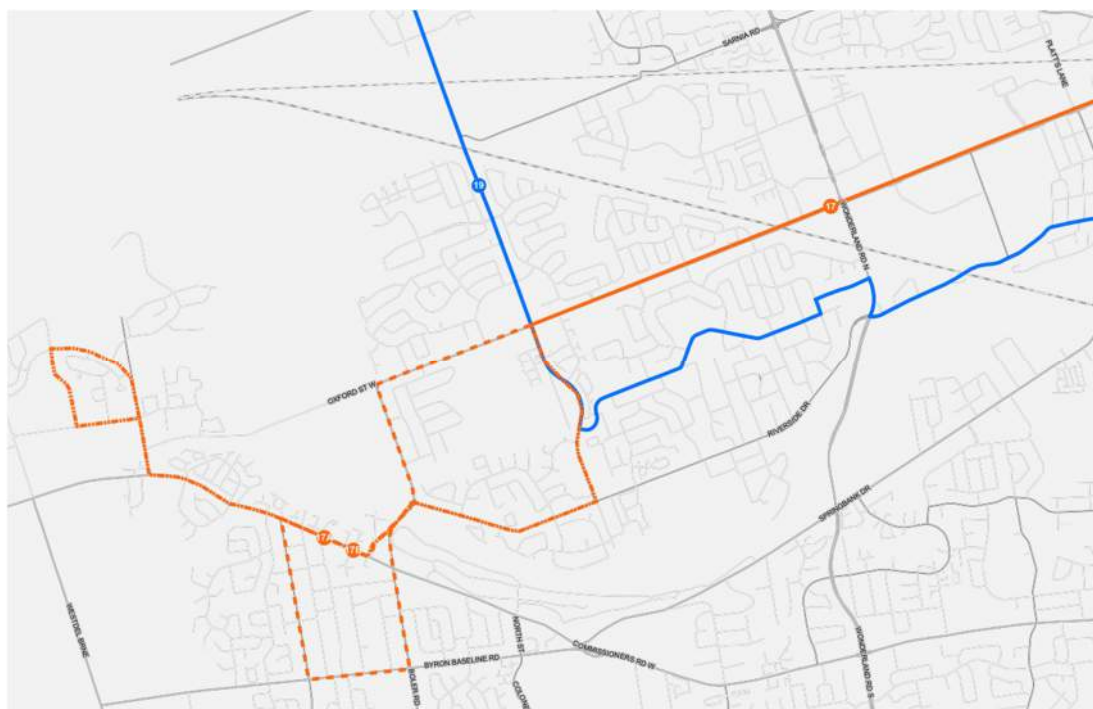
Passengers that access Route 8 - Riverside on Riverside Drive between Hyde Park and Wonderland Road will no longer have access to service with the elimination of Route 8 - Riverside. There are 23 daily

boardings that occur in this segment. Some of these passengers would need to walk further to Route 17 – Oxford West or Route 19 - Oakridge to catch a connecting bus.

Passengers on Route 17 – Oxford West will no longer have a direct connection to Argyle Mall. However, the proposed changes to Route 32 - Windermere will maintain service from Fanshawe College to Argyle Mall (*see page 86 for details*).

Passengers on Route 17 – Oxford West will no longer have a direct connection to Clarke Road. However, the proposed changes to Route 3 – Hamilton Rd. will maintain service along Clarke Road from Argyle Mall.

Figure 25 – Recommended Route 17/Route 8 Modifications



### *Route 3 – Hamilton Rd.*

#### Description of Service / Issues

Route 3 – Hamilton Rd. serves as a local route providing direct service from downtown along Hamilton Road to the Fairmont and Parkview residential neighbourhoods. The route is structured as a corridor service connecting residents to the downtown. There is high passenger demand along Hamilton Road which warrants the 15 minute headway. East of Highbury Avenue and along the residential loop, demand is reduced and does not require a 15 minute headway.

There is an opportunity to connect the route to a second major destination at Argyle Mall. Transit routes are more effective when they service multiple destinations and provide connections to various areas in the City. This revision would improve two-way travel on the route and should increase

ridership. There have also been several requests for service in the residential area northeast of Hamilton Road and Clarke Road. The extension of Route 3 – Hamilton Rd. could accommodate this request for service.

The proposed change improves direct connections between major origins and destinations, helps 'right size' the level of service on Clarke Road, enhances overall service levels and expands service to new residential areas. See Figure 26 for the proposed route modification.

### Recommendations

1. Weekday Period from 6:00am to 6:00pm:
  - a. Revise the route to split at the intersection of Hamilton Road and Hale Street. The first branch 3A – Hamilton Rd. will follow the existing one-way loop through the residential area north of Hamilton Road and maintain the 60 minute round trip travel time. Branch 3B – Hamilton Rd. will travel southeast on Hamilton Road to Clarke Road and go north to Argyle Mall creating a 90 minute round trip. The portion on Clarke Road would replace service currently provided by Route 17 – Oxford West.
  - b. The combined service will continue to provide two-way 15 minute service along Hamilton Road between the downtown and Hale Street. Service in the residential area northeast of Hamilton Road and Hale Street would be increased to a 30 minute headway. A new 30 minute headway service would be provided to the Fairmont and Parkview residential areas and along with a connection to Argyle Mall along Clarke Road.
2. Weekday After 6:00pm and Weekends
  - a. During the periods in which the route operates at a 30 minute or 60 minute headway, Route 3A – Hamilton Rd. will be extended to Argyle Mall to ensure a clock-face headway is maintained. Route 3A – Hamilton Rd. will travel north on Hale Street to Tweedsmuir Avenue, then Montebello Drive to Gore Street then north on Clarke Road to Argyle Mall. This provides a 90 minute round trip travel time which allows combined 30 and 60 minute headways to be operated on Hamilton Road and Clarke Road. Route 3B – Hamilton Rd. will remain the same – travelling southeast along Hamilton Road to Clarke Road to Argyle Mall.
3. Saturday – Reduce the combined headway from 60 minutes to 30 minutes from 6:00am to 8:00am.

### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 6,552
- New Bus Purchase Requirements: 2



## Impacts

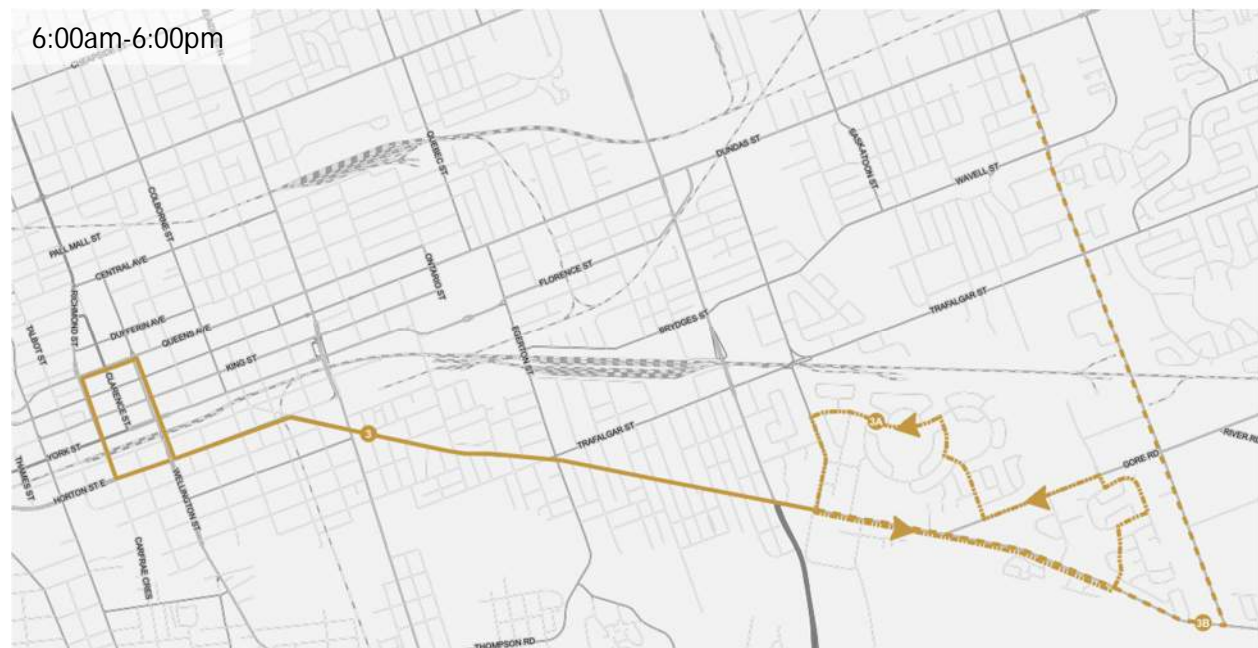
Residents of the Fairmont and Parkview neighbourhoods will have a direct connection to Argyle Mall and additional London Transit bus routes. Given that this neighbourhood will now have two-way bus service, additional bus stops will need to be added to the Fairmont neighbourhood.

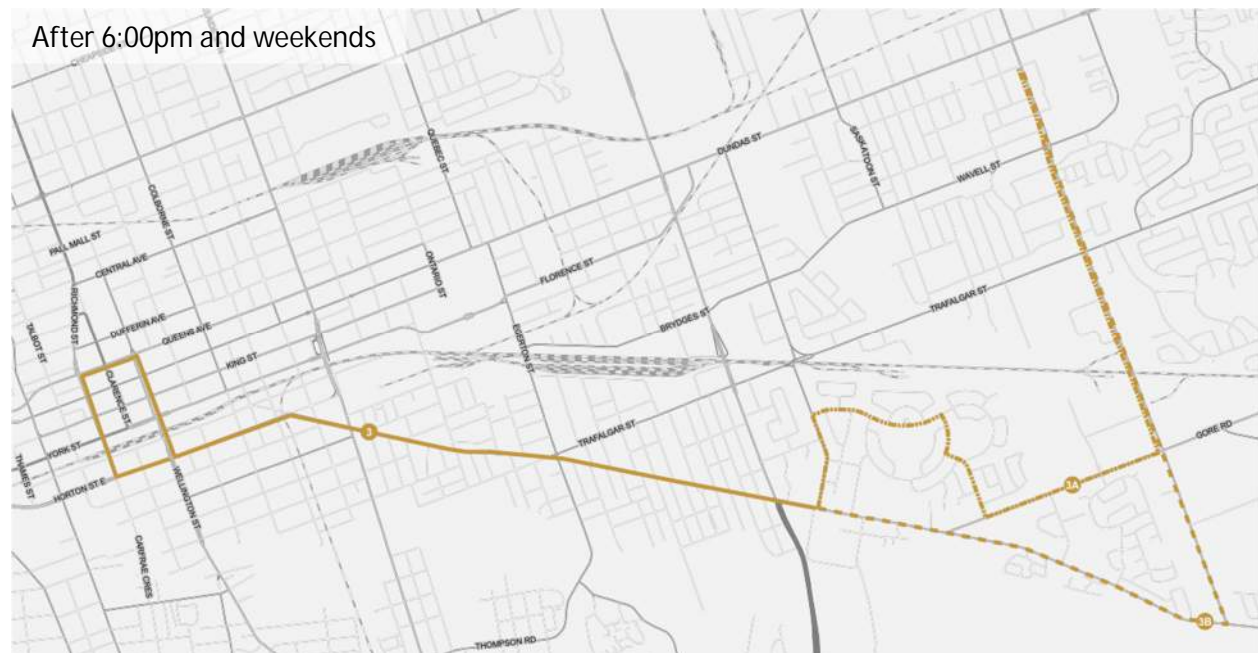
The proposed route change will provide a slightly reduced level of service to the area along Clarke Road which is currently provided by Route 17 – Oxford West (from 20 minute peak service to 30 minute peak service). The level of service currently provided on Clarke Road is based on demand for service on Oxford and is too high given the limited ridership demand. This will impact approximately 300 daily weekday boardings on this section of the route.

During the periods in which the route operates at a 30 minute or 60 minute headway, service is removed from Classic Drive and River Run Terrace. This portion of the route currently generates 29 daily weekday boardings. These passengers are still within a 400m walking distance of Route 3A – Hamilton Rd. or 3B – Hamilton Rd.

Residents on Clarke Road will see an increase in service on Sundays. Previously Route 17 – Oxford West operated at a 60 minute frequency while the proposed Route 3 – Hamilton Rd. operates at 30 minute frequency. This area along the route currently generates 109 daily Sunday boardings.

Figure 26 – Recommended Route 3 Modification





### *Route 32 – Windermere / Route 14 - Highbury*

#### Description of Service / Issues

Route 14 - Highbury is a major arterial north-south crosstown route travelling along Highbury Avenue from White Oaks Mall. This route operates well and exceeds performance standards. A large portion of passengers alight this route at the intersection of Highbury Avenue and Oxford Street. Ridership counts show the number of passenger alighting at this intersection (397 daily weekday alightings) is greater than the number of passengers that continue north on this route. Based on observation, the majority of these passengers are destined to Fanshawe College or the secondary school at the intersection of Highbury Avenue and Oxford Street.

Route 32 - Windermere is an east-west local route that connects residents in Ridgeview Heights and Stoneybrook Acres to Western University. The route only connects residents to one major destination (Western University). Transit routes are more effective when they provide connections to multiple destinations. With the proposed realignment of Route 17 – Oxford West and 14 - Highbury, there is an opportunity to connect the route to Fanshawe College and Argyle Mall. This would improve connections for residents along the route and provide access to three major destinations. See Figure 27 for the proposed Route 32 - Windermere and Route 14 - Highbury modifications.

## Recommendations

1. Route 14 - Highbury
  - a. Re-structure Route 14 - Highbury to maintain the existing routing alignment from White Oaks Mall, and travel north on Highbury Avenue, east on Oxford Street and terminate the route at Fanshawe College.
2. Route 32 - Windermere
  - a. Re-structure Route 32 - Windermere to maintain the routing alignment from Western University to Kipps Lane, Fuller Street and travel south on Highbury Avenue to Oxford Street to Fanshawe College. From Fanshawe College the route will travel along Third Street and Culver Drive to Clarke Road and terminate at Argyle Mall.
  - b. Weekday - Introduce service from 9:00pm to 11:00pm (30 min headway) and 11:00pm to 12:00am (60 min headway).
  - c. Weekday - Reduce headway from 60 min to 30 min from 6:00pm to 9:00pm.
  - d. Saturday - Introduce service from 6:00am to 8:00am and 9:00pm to 12:00pm (60 min headway).
  - e. Sunday - Introduce service from 7:00pm to 11:00pm (60 min headway).

## Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 8,294
- New Bus Purchase Requirements: 1

## Impacts

The modification to Route 14 - Highbury will reduce the number of transfers to access Fanshawe College and improve connectivity to other transit routes in the network (allowing passengers to transfer at a major terminal with access to multiple transit routes). The proposed change removes service north of Oxford Street, however, the proposed change to Route 32 - Windermere will provide service to these passengers. Passengers who board north of Oxford Street and are travelling further south along Highbury Avenue will be required to transfer from Route 32 - Windermere to Route 14 - Highbury.

Service is removed from Melsandra Avenue which currently generates 69 daily weekday boardings. These passengers are within a 500m walking distance of Route 32 - Windermere and Route 27 – Fanshawe College.

The re-alignment of Route 32 - Windermere provides a direct connection between Argyle Mall, Fanshawe College and Western University. Transit routes are more effective when they link passengers to multiple destinations. Passengers west of Highbury Avenue will see an increase in service with the introduction of Sunday service.

The change removes a direct connection to Western University from residents along Huron Street. This section of the route attracts 234 daily weekday boardings. These passengers may still be able to walk north to Kipps Lane/Fuller Street to access Route 32 - Windermere or take Route 1 – Kipps/Thompson and transfer on the Richmond Street corridor. This issue will likely reduce over a 2-3 year period as student housing choices will change to be closer to the realigned transit route.

Figure 27 – Recommended Route 32/Route 14 Modifications



### *Route 13 Northridge/Grenfell / Route 25 – Kilally / NEW ROUTE - Route 40*

#### Description of Service / Issues

Route 13 Northridge /Grenfell are two residential loops that operate with the base arterial Route 13 – Wellington Rd. along the Richmond/Wellington corridor. The two residential loops connect residents in the north to Masonville Mall. Ridership along Grenfell and Northridge is significantly less than the main Wellington/Richmond corridor and the 13A loop. The overall performance achieved on the Grenfell/Northridge branches are closer to a local route than a base arterial and may not require the same level of service.

Route 25 - Kilally is a minor arterial north-south route connecting northeast residential areas along Highbury Avenue to Fanshawe College. This route provides limited service only on weekdays from 7:00am to 6:00pm. Productivity on the route is one of the highest in the system.

One of the challenges is that Route 25 - Kilally provides service to only one major destination to an area with limited residential coverage. Extending the route to Masonville Mall would provide Fanshawe students with an attractive travel alternative to another destination and would extend the market potential by traversing through a larger residential neighbourhood.

The proposed changes address the unbalanced demand along Route 13 – Wellington Rd., provide improved connections to major origins and destinations and enhance overall service levels while minimizing the impact on existing passengers. See Figure 28 for the proposed changes.

### Recommendations

1. Route 13 – Northridge / Grenfell
  - a. Re-structure Route 13 to terminate at Masonville Mall separating the Northridge and Grenfell loops from the route.
  - b. Separate Route 13 Grenfell to create its own route (Route 40) and extend the loop to Stackhouse Avenue to provide additional residential coverage. The route would travel east along Fanshawe Park Road to Stackhouse Avenue, north on Stackhouse Avenue, then west on Grenfell Drive to Phillbrook Drive back to Fanshawe Park Road to travel west back to Masonville Mall.
2. Route 25 - Kilally
  - a. Re-structure Route 25 - Kilally to extend to Masonville Mall. From Fanshawe College maintain existing alignment to Killarney Road (travelling north on Fanshawe College Blvd., west on Huron Street and north on Highbury Avenue). Travel west on Killarney to McLean Drive and Glenora Drive, then north on Adelaide Street and west on Fanshawe Park Road to Masonville Mall. The one-way travel time between Masonville Mall and Fanshawe College would be 60 minutes.
  - b. Enhance service levels on Route 25 - Kilally to be similar to service levels previously provided on Route 13 – Wellington Rd.

### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 3,160
- New Bus Purchase Requirements: -1

### Impacts

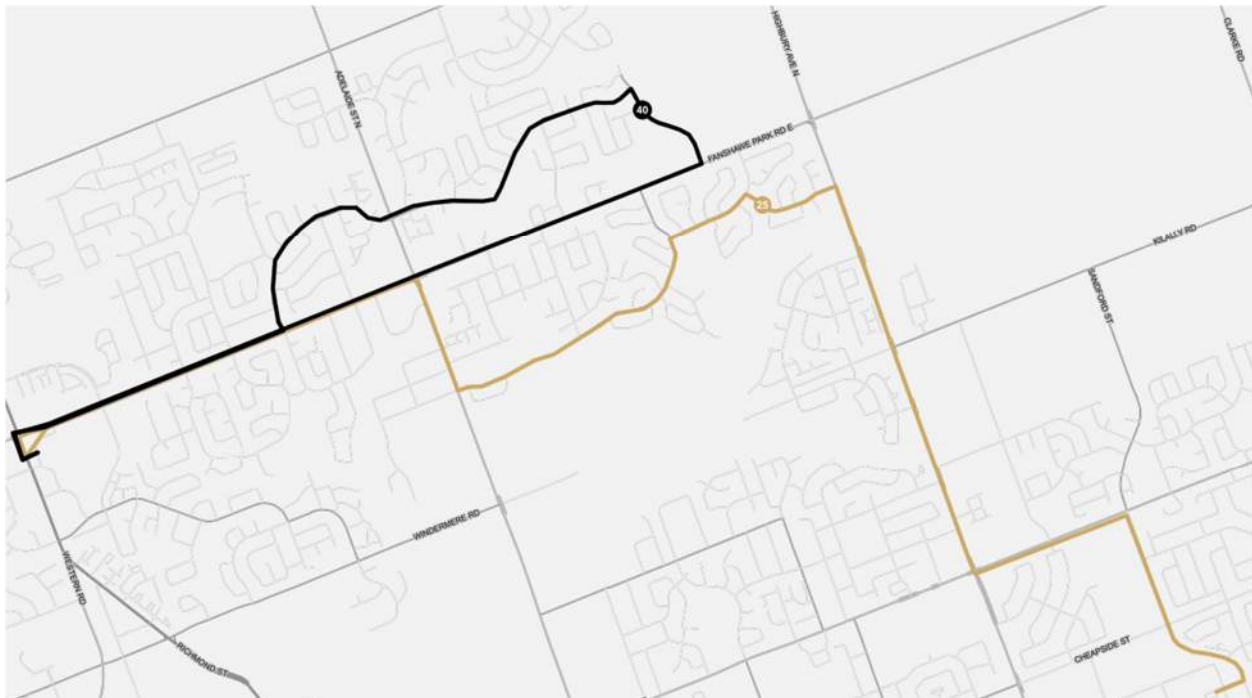
Residents in Stoneybrook Meadows will have a direct connection to Highbury Avenue and Fanshawe College.

Passengers on Fanshawe Park Road between Masonville Mall and Stackhouse Avenue will see a reduced frequency during all operating periods (e.g. 15 minute headway to a 30 minute headway during the peak periods). The passenger boardings on this section of the corridor were not high enough to justify this level of service. Residents will now have to transfer at Masonville Mall to travel along the Wellington/Richmond corridor. Service is removed from Fanshawe Park Road between Stackhouse Avenue and Highbury Avenue. Ridership on this section of Fanshawe Park is limited.

Passengers on Route 25 - Kilally and other Fanshawe students now have a direct connection to Masonville Mall.



Figure 28 – Recommended Route 25 Modification and New Route 40



### *Route 31 – Orchard Park*

#### Description of Service / Issues

Route 31 – Orchard Park is a local route connecting northwest residential areas to Western University and the commercial plaza at the intersection of Hyde Park Road and Fanshawe Park Road. There is a significant amount of residential growth planned for the area north of Fanshawe Park Road where the route currently operates. There is an opportunity to expand the route alignment north of Fanshawe Park Road to provide additional coverage in the area. See Figure 29 for the proposed modification.

#### Recommendations

1. Revise the route alignment on Fanshawe Park Road to go north on Aldersbrook Gate and west on Tokala Trail, south on Hyde Park into the commercial plaza.
2. Sunday - Introduce service from 9:00am to 7:00pm (60 min headway).
3. Weekday - Reduce headway from 60 min to 30 min from 6:00pm to 11:00pm; Introduce service from 11:00pm to 12:00am (60 min headway).

#### Service Hour and Vehicle Requirements

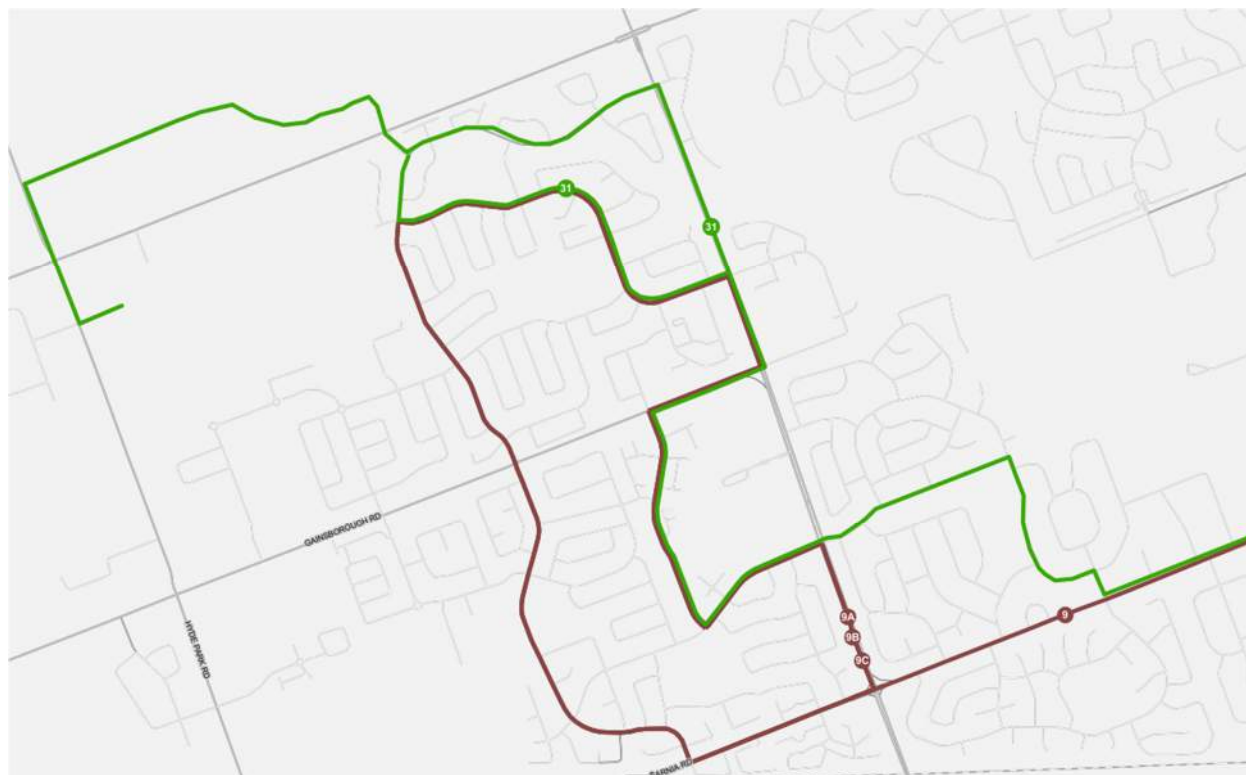
- Annual Service Hour Requirements: 2,430
- New Bus Purchase Requirements: 0

#### Impacts

Extending the route north will provide coverage into a growing residential area. The revised route will also travel in front of a secondary school and the commercial area north of Fanshawe Park Road. Service is removed from Fanshawe Park Road between Aldersbrook Road and Hyde Park Road, however this

section is currently covered by Route 39 – Fanshawe West. The timing of this route modification would need to wait until the above noted roadways are assumed by the City of London.

Figure 29 – Recommended Route 31 Modification



### *Route 10 – Wonderland*

#### Description of Service / Issues

Route 10 - Wonderland is a major arterial route that provides north-south service along Sarnia Road, Wonderland Road and Southdale Road. The route connects Western University to White Oaks Mall via Wonderland Road. The route also operates 10A - Wonderland and 10B - Wonderland. Route 10A - Wonderland operates between Western University and Southdale Road/Wonderland Road while Route 10B - Wonderland operates from the Westhill Centre Plaza to Western University.

The majority of demand along the route is north of Oxford Street to Western University (forms part of the Frequent Transit Network). Demand south of Oxford is much lower and does not require the same level of service as north of Oxford Street. Elimination of Route 10A - Wonderland would simplify the schedule and reduce service hours to better match demand. The Wonderland corridor also forms part of the Strategic Network, providing important connections throughout the City to White Oaks Mall, Westmount Mall, Western University and Masonville Mall.

While 10B - Wonderland is grouped with 10 - Wonderland, Route 10B - Wonderland can operate as a separate route during the school year providing added capacity along Sarnia Road to the University. See Figure 30 for the proposed change.

### Recommendations

1. Eliminate Route 10A - Wonderland
2. Separate Route 10B - Wonderland from 10 - Wonderland and create a separate route name and number (Route 29).
3. Sunday - Reduce headway from 60 min to 30 min from 9:00am to 7:00pm on Route 10 - Wonderland.
4. Weekday - Reduce headway from 30 min to 20 min from 7:00am to 9:00am and 2:00pm to 6:00pm on Route 10 - Wonderland.

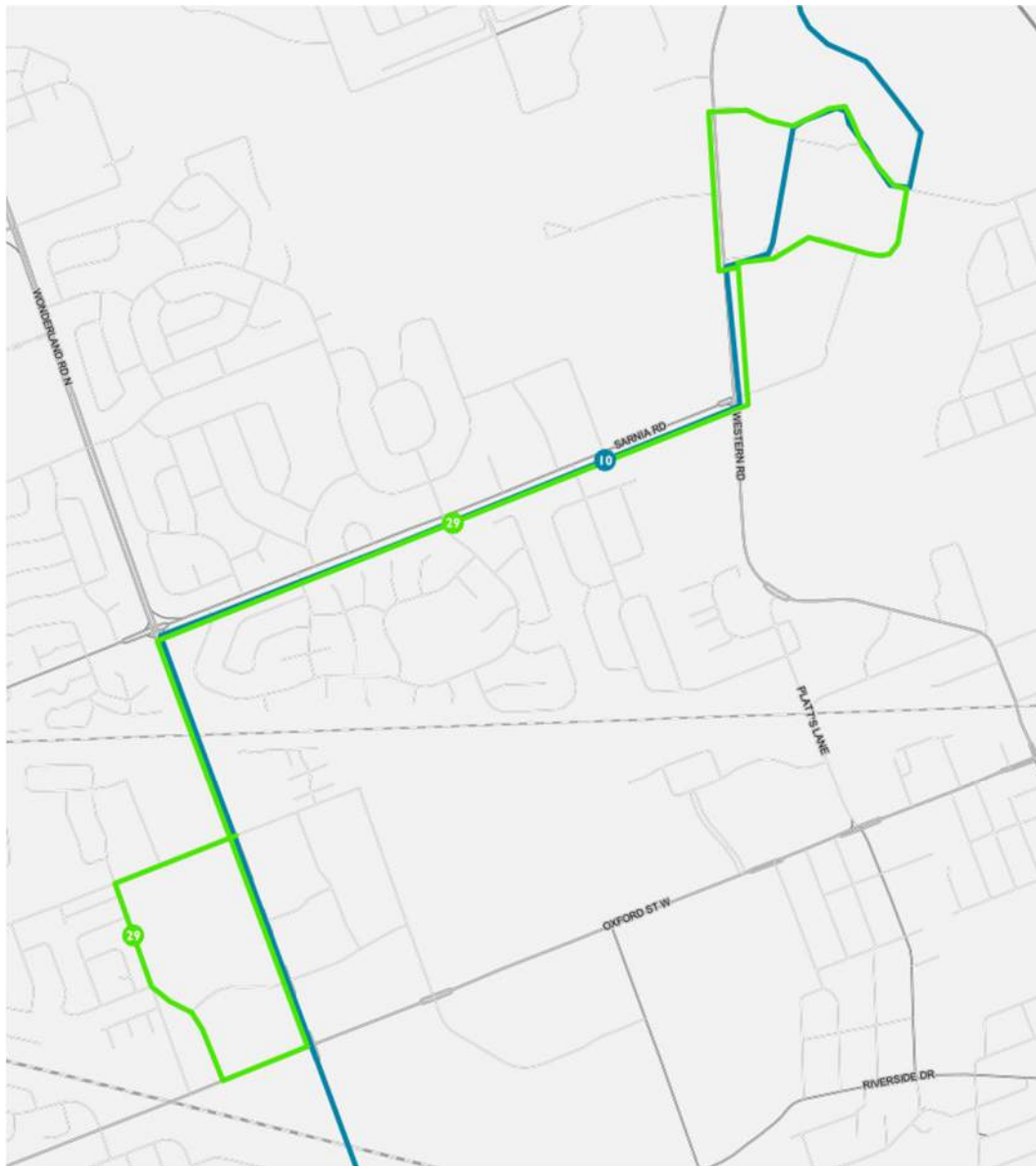
### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 3,936
- New Bus Purchase Requirements: 2
- *Note: includes the savings of Route 10A and the service level improvements*

### Impacts

The elimination of 10A - Wonderland will reduce the service level slightly along the corridor and simplifies the route. The increase in weekday peak and Sunday service levels will build future ridership and allows this Base Arterial Route to meet minimum service level standards as described in Section 5.0. The separation of Route 10B - Wonderland will make it easier for passengers to understand the schedules.

Figure 30 – Recommended Route 10 Modification



#### *Route 1 – Kipps/Thompson / Route 6 – Richmond*

##### Description of Service / Issues

Route 1 – Kipps/Thompson and Route 6 - Richmond are major north-south corridor routes that travel through the downtown core. Route 1 – Kipps/Thompson travels east of the Richmond/Wellington corridor and provides residents in Ridgeview Heights with a connection to downtown and Victoria Hospital. The route also operates a split tail east of Victoria Hospital. Route 6 - Richmond travels along the Richmond corridor and provides a connection from downtown to Western University. South of downtown, the route connects to Victoria and Parkwood hospitals.



For both routes ridership significantly drops south of downtown and does not require a 15-20 minute service.

The proposed change helps address the unbalanced demand along both routes while minimizing impacts to existing passengers. See Figure 31 for the recommended modifications.

### Recommendations

1. Restructure Route 1 – Kipps/Thompson to:
  - a. Terminate downtown. The route will maintain its existing alignment north of the downtown core.
  - b. Weekday - Reduce base peak service from 9:00am to 2:00pm from 20 min to 15 min headway.
2. Restructure Route 6 - Richmond to:
  - a. Maintain the route alignment north of downtown.
  - b. Implement a two-way loop south of downtown. Route 6A - Richmond would continue south and follow its existing alignment to Parkwood Hospital. On the return trip it will travel north through the Victoria Hospital along Fairview Avenue, to Bond Street to Wellington Road then loop around South Street and Grey Street, return to Wellington Road, go west on Queens Avenue and resume travelling northbound along Richmond Street. This follows the alignment of Route 1 – Kipps/Thompson. Route 6B - Richmond would follow the reverse direction of service south of the downtown. The loop would operate as a split, to ensure two-way travel.
  - c. Weekday - Reduce service from 20 min to 15 min headway (30 min per branch) between 7:00am and 9:00am (Fall/Winter only).
  - d. Saturday - New service from 6:00am to 8:00am (30 min headway - 60 min per branch).
3. Route 6C - Richmond - Weekday - Reduce headway from 15 min to 10 min from 1:30pm to 7:00pm (Fall/Winter only).

### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: -6,579
- New Bus Purchase Requirements: -2
- *Note: this is a net savings that includes the frequency improvements*

### Impacts

Route 1 – Kipps/Thompson will operate as a local route connecting residents in Ridgeview Heights to downtown via Huron Street, Richmond Street and Colborne Street.

Service is removed south of downtown. However, this is accommodated by the proposed Route 6 modifications. Passengers south of downtown see a reduced frequency during all operating periods (e.g. existing 20 minute headway increased to a 40 minute headway during the peak periods). The existing ridership profile for both routes south of downtown can be accommodated with the reduced level of service.

The removal of Route 1A – Kipps/Thompson and 1B – Kipps/Thompson to the Chelasea Green neighbourhood is accommodated by revisions to Route 4 – Oxford East (see below for details).

Figure 31 – Recommended Route 1/Route 6 Modifications



### *Route 4 - Oxford East / Route 26 – Jalna West / Route 13 – Wellington*

#### Description of Service / Issues

There are a number of routes operating to the west of White Oaks Mall that are destined to downtown and serve the back entrance of the mall. Route alignments have been suggested to improve connections to White Oaks Mall while maintaining direct access to downtown.

Route 26 – Jalna West is a north-south route that connects residents in Southdale and Cleardale to downtown via Wharncliffe Road.

Route 4 – Oxford East is a minor arterial route that connects residential areas west of the Wellington/Richmond corridor to downtown and Fanshawe College. This route operates at a high frequency throughout the day, however, the majority of demand is focused north of downtown along Oxford Street to Fanshawe College. Ridership significantly drops south of Base Line Road. With revisions to Route 1A/B – Kipps/Thompson, the Chelsea Green neighbourhood no longer has access to transit services. A modification to Route 4 – Oxford East would be above to fill this gap.

Route 13 – Wellington Rd. is a major arterial route that travels from White Oaks Mall to downtown through Western University to Masonville Mall along the Wellington/Richmond corridor. All routes exceed performance standards.

The proposed changes provide residents that live adjacent to White Oaks Mall with a direct connection to the mall. This provides access to a number of other LTC routes and facilitates transfers. See Figure 32 for the proposed modifications.

#### Recommendations

1. Route 26 – Jalna West
  - a. Restructure Route 26 – Jalna West at Ferndale Avenue to continue to Dundalk Drive and travel south to Jalna Boulevard, then east on Bradley Avenue to White Oaks Mall.
  - b. Weekday - Extend service from 10:00pm to 11:00pm.
2. Route 4 – Oxford East
  - a. Restructure southern portion of the route to provide two-way service to Lockwood Park. Travelling south on Ridout Street, the route would follow the 4B deviation through Lockwood Park back to Nixon Avenue.
  - b. Restructure southern portion of the route to provide better access to White Oaks Mall transit terminal. The route would travel south on Ernest Avenue to Jalna Boulevard, east on Exeter Road, north on Wellington Road to White Oaks Mall. When departing White Oaks Mall the bus would travel north on Wellington Road, west on Bradley Road and north travel north back along Ridout to downtown and maintain the existing routing back to the downtown and to Oxford Street.
  - c. Split the route at Base Line Road. Route 4A – Oxford East would be revised to travel east along Base Line Road, north on Thompson Road, south on Pond Mills Road to Shelbourne Road, south on Deveron Road, west on Commissioners Road, north on King

Edward Road returning to Thompson Road. This is the existing Route 1A/B – Kipps/Thompson alignment.

- d. Saturday - Improve service from 5:00pm to 9:00pm (60 min to 40 min headway).
  - e. Sunday - Improve service from 9:00am to 7:00pm (60 min to 40 min headway).
3. Route 13 – Wellington Rd.
- a. Restructure Route 13 – Wellington Rd. to terminate at Masonville Mall to the north (separate 13 Grenfell and 13 Northridge as previously mentioned).
  - b. Operate Route 13A – Wellington Rd. as normal. Introduce 13B– Wellington Rd., which would be a loop travelling from White Oaks Mall to the west circling around Jalna Boulevard. The main branch of Route 13 – Wellington Rd. combined with either 13A or 13B would operate on a round trip travel time of 60 minutes.
  - c. Weekday - Operate a 30 min headway from 9:00pm to 12:00am
  - d. Saturday - Operate a 30 min headway from 6:00pm to 12:00am
  - e. Sunday - Operate a 30 min headway from 9:00am to 11:00pm.

#### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 2,769
- New Bus Purchase Requirements: 0

#### Impacts

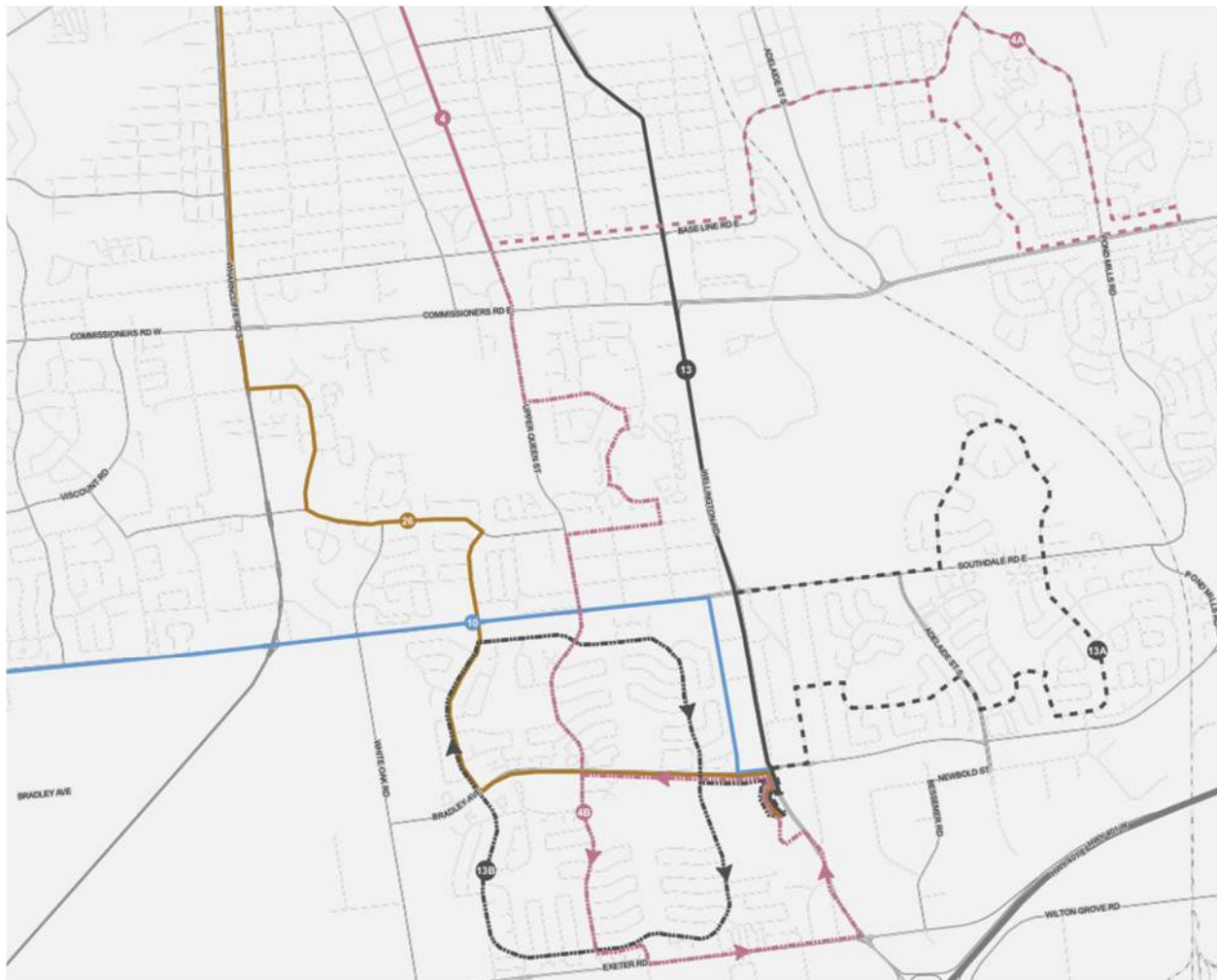
Residents that live adjacent to White Oaks Mall on the west side have a direct connection to White Oaks Mall and downtown via Wellington Road. They also have the option of transferring to the Express 91 service or other routes at the White Oaks Mall terminal. The revised service would require between 1 to 3 additional bus bays at the White Oaks Mall terminal (depending on how routes are scheduled). The additional bus bay(s) require a capital investment.

Residents south of Base Line Road on Route 4 would see a reduction in service; however, the existing ridership profile can be accommodated with the proposed level of service. The addition of Route 13B – Wellington Rd. would cover off much of this area and provide additional service.

While some of the proposed routing alignments remove service from residents, the other proposed changes will ensure passengers have access to transit service.



Figure 32 – Recommended Route 4/Route 26/Route 13 Modifications



### Route 16 - Adelaide

#### Description of Service / Issues

Route 16 - Adelaide is a north-south base arterial route providing service along Adelaide Street. The route has two branches on the southern portion of the route providing service to Glencairn Woods and Summerside residential neighbourhoods. This route currently exceeds the minimum productivity performance standards. With the proposed change to Route 24 – Base Line, Route 16B - Adelaide should see increased ridership by eliminating the duplicate route.

The existing service currently travels near Victoria Hospital, but does not come close enough to directly connect with this major destination. Realigning the route slightly to the west would connect passengers along Adelaide to these major employment nodes and also to the Wellington corridor (which may be a future Rapid Transit corridor). See Figure 33 for the proposed modification.

### Recommendations

1. Maintain existing route alignment north of Thompson Road.
2. Maintain existing Route 16B - Adelaide alignment.
3. Modify 16A - Adelaide to travel on Westminister Avenue to Base Line Road, then south on Wellington Road to Commissioners Road, travel through the Victoria Hospital and then east on Commissioners Road. Shorten the one-way loop to travel south on Devron Court and west on Banbury Road and then north on Pond Mills Road back to Commissioners Road.
4. Saturday - Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm.

### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 416
- New Bus Purchase Requirements: 0

### Impacts

The proposed change works in conjunction with the Route 24 – Base Line changes. The change in 16A - Adelaide allows residents in their neighbourhood to connect directly to Wellington Road (Route 90 Express) and the Victoria Hospital.

Route 16A - Adelaide now provides a connection to the hospital. Residents north of downtown along the Adelaide corridor have a direct connection. The origin-destination survey conducted as part of the City of London Transportation Master Plan identifies a growing demand between the northeast area of the City and the traffic zone around the Victoria Hospital.

The proposed change does remove service from Deveron Road and Pond Mills Road south of Banbury Road. A total of 37 daily passenger boardings occur on this section of Route 16A - Adelaide. Most of these passengers would be required to walk a slightly longer distance to access Route 16A - Adelaide or would also be within walking distance of Route 14 - Highbury.

Figure 33 – Recommended Route 16 Modification



### Route 34 – Medway

#### Description of Service / Issues

This local route connects the Medway residential area to Masonville Mall and Western University. There is an existing residential neighbourhood north of Fanshawe Park Road that currently has no service. Future residential growth is also planned north of this area. See Figure 34 for the proposed changes.

#### Recommendations

1. Re-align the route to travel north of Fanshawe Park Road along Louise Boulevard and McGarrell Drive back to Pinnacle Parkway (removing service from Fanshawe Park Road).
2. Increase the round trip travel time from 30 minutes to 40 minutes.
3. Introduce weekday base service from 9:00am to 2:30pm.

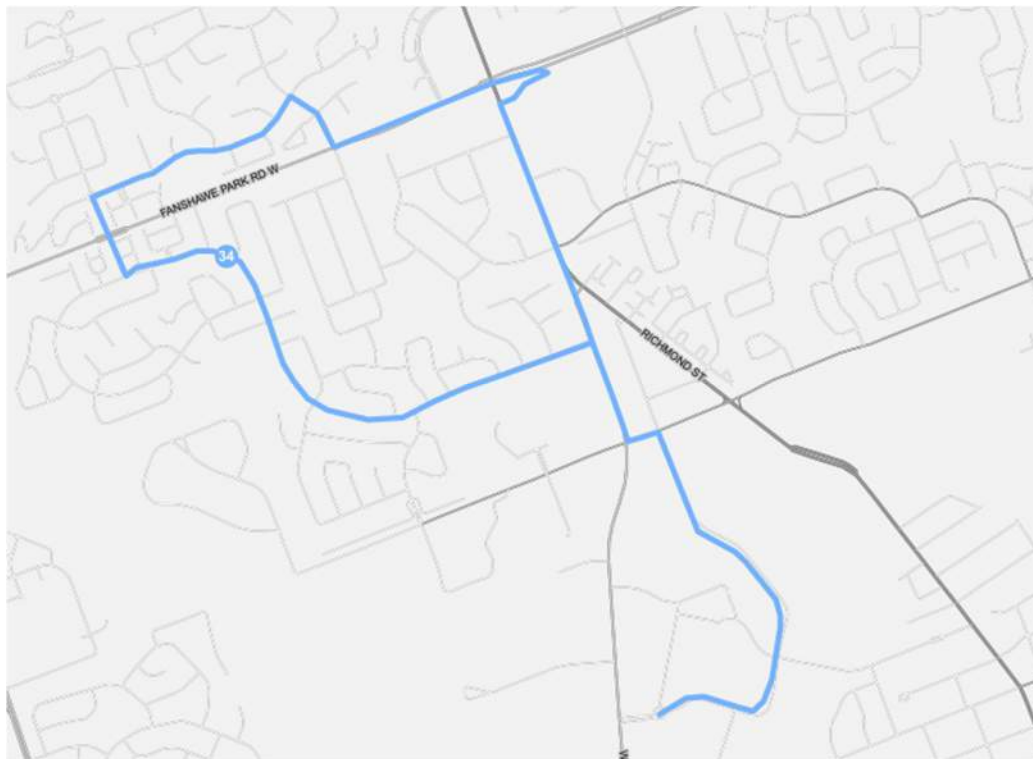
### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 1,265
- New Bus Purchase Requirements: 0

### Impacts

Service is removed from Fanshawe Park Road. Current stop activity is limited along Fanshawe Park Road. The extension of the route would provide some service to a new residential area where future growth is planned in close proximity. Route 39 – Fanshawe West will maintain service along Fanshawe Park Road. The service connects residents to Masonville Mall and Western University.

Figure 34 – Recommended Route 34 Modification



### *NEW ROUTE - Route 92 – Adelaide Express*

The recent introduction of the Route 90 and 91 express routes have been successful. Ridership on both routes continues to grow without reducing significant ridership on the Base Arterial Routes that run along the same corridors (Route 13 – Wellington Rd. and 17 – Oxford West respectively).

Route 16 Adelaide is a successful Base Arterial Route that travels the extent of the Adelaide corridor. The corridor connects Masonville Mall (a designated Transit Village) with several key destinations and transfer points along the corridor (e.g. Oxford Street and Dundas Street). There is an opportunity at the southern end of the corridor to provide a direct connection to Victoria Hospital and Wellington Road. This provides passengers with another direct employment node and improve connectivity in the system (with a link to Route 90 Express on Wellington).



Passenger activity on the route is also concentrated on a few key stops, including Masonville Mall, Oxford Street, Dundas Street, Huron Street and Kipps Lane. Express corridors fair well when there is a concentration of passenger activity at limited stops.

The one-way travel time on Route 16 - Adelaide from Masonville Mall to the intersection of Adelaide Street and Commissioners is approximately 32 minutes. The introduction of an express route between these two points could reduce the travel time by 15 to 25 percent (depending on the number of stops). The proposed route continues to build on the success of the express network and improves overall service levels to passengers. See Figure 35 for the proposed route.

#### Recommendation

1. Introduce new express route on Adelaide Street beginning at Masonville Mall travelling east on Fanshawe Park Road, south on Adelaide Street and west on Commissioners Road to Victoria Hospital and Wellington Road.
2. Key stops to include Masonville Mall, Fanshawe Park Road and Adelaide Street, Adelaide Street at the intersections of Kipps Lane, Cheapside Street, Oxford Street, Dundas Street and Hamilton Road and at Victoria Hospital and Wellington Road.
3. Improve frequency over the life of the plan to operate a 15 minute headway during the AM and PM peak periods and 20 minutes during the base period.

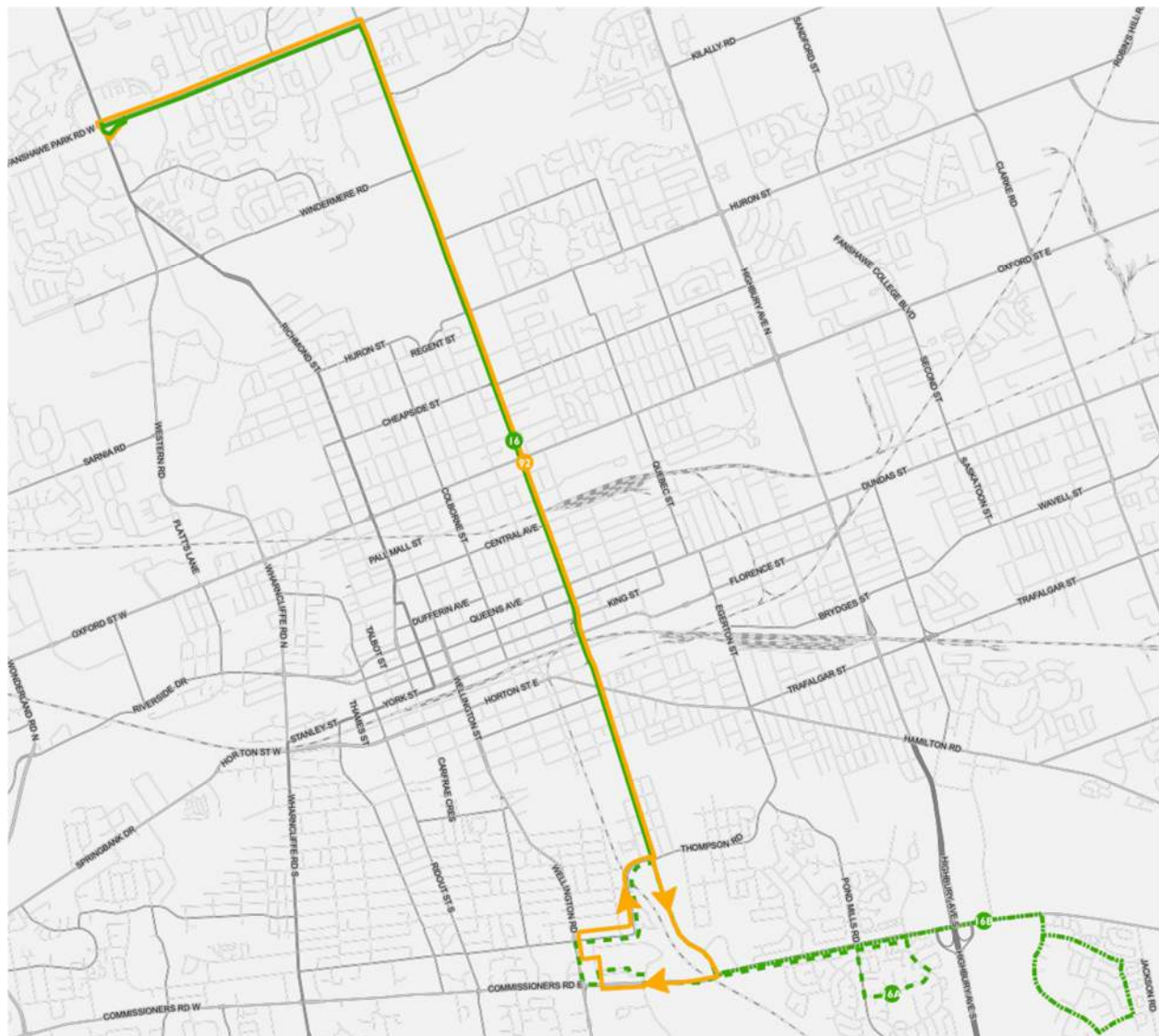
#### Service Hour and Vehicle Requirements

- Annual Service Hour Requirements: 3,542
- New Bus Purchase Requirements: 5

#### Impacts

A reduction in ridership is anticipated on Route 16 - Adelaide over the short- term, however, experience gained from the introduction of Route 90 and 91 shows an overall increase in corridor ridership over time.

Figure 35 – Recommended Route 92 Express Route



## 7.4 Weekday Peak Period Service Level Improvements

The following section identifies a number of service level improvements to enhance service frequency during the peak periods. While the peak period is traditionally defined as the time between 7:00am and 9:00am (AM Peak) and 2:00pm and 6:00pm (PM Peak), London Transit's peak period often extends to the base period (9:00am to 2:00pm) given the high level of ridership that occurs during this time. This is partially due to the high level of student ridership on the system and the desire to travel during this period. For this reason, the base period has been included in this analysis and recommendations that follow.

The objective of the improvements identified below is to enhance service levels on the Frequent Transit Network and Strategic Corridors (Section 7.1, Figure 18), build ridership to eventually support the implementation of Rapid Transit in London and address current and future overcrowding issues.

Recommended improvements were compared against the productivity targets identified in Service Standards Guidelines outlined in Section 5.0 to ensure performance targets continued to be met. The following section identifies the proposed improvements.

### Express Routes

Express Routes provide a high level of service for transit customers and have seen significant growth in ridership since they were introduced. The service is provided during the weekday peak and base periods only targeting the commuting passenger (work or school). The expansion of these routes will also help London Transit build for the eventual introduction of Rapid Transit.

There are two existing and one proposed Express Routes in the Part 1 network:

1. Route 90 - Express provides a north-south express service along the Richmond/Wellington corridor between Masonville Mall and White Oaks Mall during the weekday AM, base and PM periods. The service has been successful, exceeding the minimum boardings per revenue vehicle hour target in less than a year.
2. Route 91 - Express provides an east-west Express service along Oxford Drive. The service was introduced in 2014 to operate in the AM and PM peak period during the Fall/Winter service (sign-up) period. The service has been successful, exceeding the minimum boardings per revenue vehicle hour target in less than a year.
3. Route 92 - Express is proposed to operate on the Adelaide corridor between Masonville Mall and Victoria Hospital (as described Section 7.3). The initial introduction of the service will be during the weekday AM and PM peak periods.

### Base Arterial Routes

A number of service level improvements are recommended to the Base Arterial Routes. As identified in Section 5.0, Base Arterial Routes provide direct service on arterial corridors connecting two or more major destinations and/or transfer points in the system. Most Base Arterial Routes also form part of the Frequent Transit Network and Strategic Network. Improvements to Base Arterial Routes are focused on meeting minimum service frequency design standards (20 minute peak period headway, 30 minute base period), growing ridership to address the City of London transit mode share objectives and enhancing service quality by addressing real and perceived crowding issues.

Under the restructured route network as identified in Section 7.3, weekday peak period service improvements are identified on the following Base Arterial Routes:

1. Route 10 – Wonderland: Bring service to a 20 minute peak period headway or better.
2. Route 13 – Wellington Rd: Further Enhance service to build ridership for the future north-south Rapid Transit connection.
3. Route 14 – Highbury: Bring service to a .20 minute peak period headway or better. Provide connectivity to the future north-south and east-west Rapid Transit corridors.
4. Route 16 – Adelaide: No peak improvement recommended. The introduction of the 92 Express will enhance service levels on the corridor.

5. Route 17 – Oxford West: Increase base service to peak period levels. No peak improvement recommended. Service frequency improvements on Route 91 Express will enhance service levels on the corridor.

### Other Peak Period Improvements

A number of other peak period and base improvements were identified to support ridership growth and address crowding issues and demand for services by customers. Other improvements support the route modifications identified in Section 7.3 above to minimize reductions in service levels as a result of any productivity improvements. Service level improvements were checked against the productivity targets and recommendations that follow are anticipated to continue to meet minimum boardings/revenue vehicle hour targets.

### Recommendations

Table 22 below identifies the recommended service level improvements during the weekday peak and base periods during the five-year life of this plan.

*It should be noted that initial service level modifications were also recommended for realigned routes identified in Section 7.3. Service level and peak period bus requirements for each route over the five-year life of this plan are in the Phasing Plan in Section 7.7 below.*

Table 22 – Weekday Peak and Base Service Frequency Improvements

Route	Recommendation	Rationale
Route 1 – Kipps/Thompson	<ul style="list-style-type: none"> <li>Reduce base headway from 20 minutes to 15 minutes from 9:00am to 2:00pm.</li> <li>Note: with service restructuring, base headway on existing portion of route south of the downtown remains at 20 minutes.</li> </ul>	<ul style="list-style-type: none"> <li>The majority of the demand on the existing route is north of the downtown.</li> <li>One of the highest ridership routes in the network.</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 18 – Western Rd (formerly Route 2C)	<ul style="list-style-type: none"> <li>Reduce headway from 6 min to 5 min from 8:00am to 9:00am and from 2:00pm to 6:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>One of the busiest routes in the system.</li> <li>Addresses crowding issues and growing student population</li> <li>Forms part of the Frequent Transit Network.</li> <li>Is well above the minimum productivity targets.</li> </ul>



Route	Recommendation	Rationale
Route 6 - Richmond	<ul style="list-style-type: none"> <li>Reduce headway from 20 min to 15 min (30 min per branch) between 7:00am and 9:00am (Fall/Winter Sign-up only).</li> </ul>	<ul style="list-style-type: none"> <li>One of the busiest routes in the system.</li> <li>Addresses crowding issues and growing student population.</li> <li>Forms part of the Frequent Transit Network.</li> <li>Is well above the minimum productivity targets.</li> <li>Minimizes impact of frequency reduction on two branches (previously 20 min headway on portion of Route 6 - Richmond and 15 min headway on portion of Route 1 –Kipps/Thompson).</li> </ul>
Route 6A - Richmond	<ul style="list-style-type: none"> <li>Reduce headway from 15 min to 10 min from 1:30pm to 7:00pm (Fall/Winter sign-up only).</li> </ul>	<ul style="list-style-type: none"> <li>Addresses crowding issues and growing student population.</li> <li>Forms part of the Frequent Transit Network.</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 10 – Wonderland	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min from 7:00am to 9:00am and 2:00pm to 6:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Identified as a Strategic Corridor north of Commissioners Road.</li> <li>Sarnia Road identified as part of the Frequent Transit Network.</li> <li>Addresses crowding issues on Sarnia Road for trips to Western University.</li> <li>Provides connection to Transit Village (White Oaks Mall) and potential Rapid Transit network.</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 14 - Highbury	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min from 7:00am to 9:00am and 2:00pm to 6:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Base Arterial Route connecting White Oaks Mall with Fanshawe College (improves connectivity in the network).</li> <li>High ridership that exceeds minimum productivity targets.</li> <li>Future connection to two Rapid Transit corridors.</li> </ul>

Route	Recommendation	Rationale
Route 17 – Oxford West	<ul style="list-style-type: none"> <li>Reduce base headway from 25 min to 20 min from 9:00am to 2:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Forms part of the Frequent Transit Network and Strategic Corridors.</li> <li>Direct connection to Fanshawe College and Richmond corridor.</li> <li>Ridership has continued to grow, even with the introduction of Route 91 Express.</li> <li>Builds ridership for future Rapid Transit Corridor.</li> <li>Brings service back to a clock-face headway.</li> </ul>
Route 20 - Cherryhill	<ul style="list-style-type: none"> <li>Reduce headway from 20 min to 15 min from 7:00am to 9:00am and 2:00pm to 6:00pm.</li> <li>Reduce headway from 30 min to 20 min from 9:00am to 2:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Portions of the route are on the Frequent Transit Network and Strategic Corridors.</li> <li>Route provides an important east-west connection through the downtown core to Fanshawe College.</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 24 – Base Line	<ul style="list-style-type: none"> <li>Reduce headway from 35 min to 30 min during weekday PM peak period.</li> </ul>	<ul style="list-style-type: none"> <li>Proposed route modifications improve schedule adherence issues.</li> <li>Allows route to run on a clock-face headway.</li> </ul>
Route 27 – Fanshawe College	<ul style="list-style-type: none"> <li>Reduce headway from 20 min to 15 min from 7:30am to 6:00pm (Fall/Winter sign-up only).</li> </ul>	<ul style="list-style-type: none"> <li>Provides direct service to Fanshawe College from a neighbourhood where a number of students reside.</li> <li>Route experiences highest instance of crowding in the system.</li> <li>Student population will continue to grow over the years.</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 30 - Newbold	<ul style="list-style-type: none"> <li>Increase service by 2 additional trips in the AM peak and 2 additional trips in the PM peak.</li> </ul>	<ul style="list-style-type: none"> <li>Is well above the minimum productivity targets.</li> <li>Provides an important connection to White Oaks Mall (Transit Village) and future rapid transit corridor</li> <li>Currently connects to the express corridor.</li> </ul>

Route	Recommendation	Rationale
Route 34 – Medway	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 40 min during AM and PM peak periods.</li> <li>Introduce service from 9:00am to 2:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Proposed route modification expands service to a new residential area.</li> <li>Provides a connection to two major destinations (Western University and Masonville Mall).</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 36 – Airport Industrial	<ul style="list-style-type: none"> <li>Introduce weekday base service from 9:00am to 2:30pm.</li> </ul>	<ul style="list-style-type: none"> <li>Expands service to the airport.</li> <li>Provides connections for Fanshawe College students who take classes at the airport.</li> <li>Highest performing industrial route in the system – well above minimum productivity target.</li> </ul>
Route 40 – Grenfell (formerly Route 13 Grenfell)	<ul style="list-style-type: none"> <li>Operate a 30 min headway from 6:00am to 6:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains an adequate service level for existing demand in the area.</li> <li>Provides service to a new residential area.</li> <li>Potential to interline with Route 34 - Medway in the future if 30 minute off-peak headway is not warranted on both routes (each route operating at a 60 min headway).</li> </ul>
Route 90 - Express	<ul style="list-style-type: none"> <li>Build on route to operate at a 10 min peak period headway from 7:00am to 9:00am and 2:00pm to 6:00pm and 20 minute base headway between 9:00am and 2:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>The service has been successful and ridership has been growing.</li> <li>Forms part of the Frequent Transit Network and Strategic Corridors.</li> <li>Build ridership on corridor to support future Rapid Transit.</li> </ul>
Route 91 - Express	<ul style="list-style-type: none"> <li>Continue to operate Route 91 service during the Spring and Summer service periods.</li> <li>Introduce base service between 9:00am and 2:00pm (20 minute headway)</li> <li>Build on route to operate at a 10 min peak period headway from 7:00am to 9:00am and 2:00pm to 6:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>The service has been successful and ridership has been growing.</li> <li>Forms part of the Frequent Transit Network and Strategic Corridors.</li> <li>Build ridership on corridor to support future Rapid Transit.</li> </ul>

Route	Recommendation	Rationale
Route 92 - Express	<ul style="list-style-type: none"> <li>Build on route to operate at a 15 min peak period headway from 7:00am to 9:00am and 2:00pm to 6:00pm and 30 minute base headway between 9:00am and 2:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Route 16 - Adelaide (which parallels Route 92 - Express) is one of London's most productive routes.</li> <li>Follows direction of Route 90 - Express and 91 - Express (builds standard for Express Corridors).</li> <li>Forms part of the Strategic Corridors.</li> <li>Provides linkages to major east-west routes and the future east-west Rapid Transit corridor.</li> </ul>

## 7.5 Weekday Evening and Weekend Service Level Improvements

Weekday evening and weekend services were assessed to identify opportunities to enhance service levels. Key objectives to enhancing off-peak services were to:

- Improve proximity to transit services where routes are not currently in operation;
- Provide a reasonable level of service (30 minute headway or better), particularly on routes that operate with a 60 minute headway;
- Enhance service levels where route productivity during this period is well above the minimum target;
- Increase service levels on branch routes, to ensure each branch maintains an adequate level of service; and
- Enhance service levels on the Frequent Transit Network and Strategic Corridors, particularly areas that may have a future connection to Rapid Transit.

Off-peak periods were assessed and ridership estimated to identify opportunities to enhance service while still meeting the minimum boardings per revenue vehicle hour target identified in the revised service standards guideline. Priorities were based on a combination of route effectiveness, service quality and proximity to service. Suggested improved off-peak service enhancements are provided below.

### Evening Weekday Service Improvements

Weekday evening service is defined by two periods: Early Evening between 6:00pm and 9:00pm and Late Evening between 9:00pm and 12:00am. Ridership on London Transit tends to decline on most runs later into the evening. As a result, service levels are adjusted to be balanced with demand. Despite this, there are a number of routes that are very productive in the evenings and may benefit from an improved level of service. Other routes service trip generators that require evening service (e.g. shopping malls and post-secondary institutions with a large night school enrollment). This was taken



into consideration with the recommendation for improved evening service, which is summarized in Table 23. Recommendations will be staged over the five year plan.

Table 23 – Weekday Evening Service Level Improvements

Route	Recommendation	Rationale
Route 13 – Wellington Rd.	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min from 6:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Builds ridership along the future north-south Rapid Transit corridor.</li> <li>Forms part of the Frequent Transit Network and Strategic Corridors.</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 15 - Westmount	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Is well above the minimum productivity targets.</li> <li>Allows the interlined pair with Route 21 – Huron Heights to remain during late evening with similar improvement to Route 21 – Huron Heights (which also operates well above the minimum productivity target).</li> </ul>
Route 17 – Oxford West	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min from 6:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Forms part of the Frequent Transit Network and Strategic Network.</li> <li>Direct connection to Fanshawe College and Richmond corridor.</li> <li>Builds ridership for future Rapid Transit Corridor.</li> </ul>
Route 20 - Cherryhill	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Is well above the minimum productivity targets.</li> <li>Majority of route travels along the Frequent Transit Network and Strategic Network.</li> <li>Direct connection to Fanshawe College, downtown and Richmond corridor.</li> </ul>
Route 21 – Huron Heights	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Is well above the minimum productivity targets.</li> <li>Allows the interlined pair with Route 15 - Westmount to remain during late evening with similar improvement to Route 15 - Westmount (which also operates well above the minimum productivity target).</li> </ul>
Route 22 - Trafalgar	<ul style="list-style-type: none"> <li>Introduce service from 6:00pm to 12:00am.</li> </ul>	<ul style="list-style-type: none"> <li>Increase service levels to maintain coverage with the elimination of Route 7 - Wavell.</li> <li>Provides direct connections to Argyle Mall and downtown.</li> </ul>

Route	Recommendation	Rationale
Route 25 - Kilally	<ul style="list-style-type: none"> <li>Introduce service on weekdays from 9:00pm to 12:00am (60 min headway).</li> <li>Reduce headway from 60 min to 30 min from 6:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Provides direct connections to Fanshawe College and Masonville Mall.</li> <li>Maintains existing service level on portion of Route 13 Northridge with route restructuring.</li> <li>Improves evening coverage on Highbury Avenue north of Fuller Street and provides improved access to Masonville Mall and night school at Fanshawe College.</li> </ul>
Route 26 – Jalna West	<ul style="list-style-type: none"> <li>Extend service from 10:00pm to 11:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Last run is well above minimum productivity targets (29 boardings per revenue vehicle hour).</li> <li>Provides a direct connection to transfer opportunities at White Oaks Mall.</li> <li>Travels along Wharncliffe Road – a Strategic Corridor.</li> </ul>
Route 31 – Orchard Park	<ul style="list-style-type: none"> <li>Reduce headway from 60 min to 30 min from 6:00pm to 11:00pm.</li> <li>Introduce service from 11:00pm to 12:00am</li> </ul>	<ul style="list-style-type: none"> <li>Travels along portions of the Frequent Transit Network.</li> <li>Provides a direct connection to Western University.</li> <li>Is well above the minimum productivity targets.</li> </ul>
Route 32 – Windermere	<ul style="list-style-type: none"> <li>Introduce service from 9:00pm to 11:00pm.</li> <li>Introduce service from 11:00pm to 12:00am.</li> <li>Reduce headway from 60 min to 30 min from 6:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Provides connections to three major destinations: Western University, Fanshawe College and Argyle Mall.</li> <li>Connects to future Rapid Transit corridors.</li> <li>Maintains existing service level on a portion of Route 17 – Oxford West between Fanshawe College and Argyle Mall and a portion of Route 14 – Highbury on Highbury Avenue with the route restructuring.</li> <li>Portion of existing route connecting to Western University operates well above minimum productivity targets.</li> </ul>
Route 35 – Argyle	<ul style="list-style-type: none"> <li>Introduce service from 6:00pm to 9:00pm at a 30 min headway.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains a direct connection to Argyle Mall from Trafalgar Heights with route restricting on Route 2A - Dundas.</li> </ul>

Route	Recommendation	Rationale
Route 38 – Stoney Creek and Route 39 – Fanshawe West	<ul style="list-style-type: none"> <li>Increase service by 1 trip from 9:00pm to 10:00pm (60 minute headway).</li> </ul>	<ul style="list-style-type: none"> <li>Provides residential neighbourhoods with a connection to Masonville Mall and the Power Centre at Hyde Park Road and Fanshawe Park Road.</li> <li>Provides employees transit service to get home after 9:00pm from these retail centres.</li> </ul>
Route 40 - Grenfell (formerly Route 13 Grenfell)	<ul style="list-style-type: none"> <li>Operate a 30 min headway from 6:00pm to 12:00am.</li> </ul>	<ul style="list-style-type: none"> <li>Part of route restructuring of Route 13 – Wellington Rd.</li> <li>Provides service level increase during late evening period.</li> <li>Potential to interline with Route 34 - Medway in the future to reduce off-peak headways.</li> </ul>

### Saturday Service Improvements

Ridership on Saturdays is approximately 52 percent of weekday ridership using 64 percent of weekday revenue service hours. While productivity is lower on Saturdays than weekdays, there is still a need to maintain a consistent level of service. Providing improved mobility options on weekends may also help increase ridership on weekdays as customers that require travel seven days a week are satisfied that transit continues to be convenient, even during low demand periods.

Saturday services were reviewed against productivity standards, proximity targets and customer comments. Service levels were enhanced on the Frequent Transit Network and Strategic Corridors. On other corridors, the objective was to bring service levels to a maximum 30 minute headway where warranted by the productivity targets. Table 24 provides a summary of the proposed service level enhancements for Saturday service. These recommendations will be staged over the five year plan.

Table 24 – Saturday Service Level Improvements

Route	Recommendation	Rationale
Route 3 – Hamilton Rd.	<ul style="list-style-type: none"> <li>Reduce combined headway from 60 min to 30 min from 6:00am to 8:00am.</li> </ul>	<ul style="list-style-type: none"> <li>Provides consistent frequency all day Saturday on new Base Arterial Route and to Argyle Mall terminal.</li> </ul>

Route	Recommendation	Rationale
Route 4 – Oxford East	<ul style="list-style-type: none"> <li>Reduce headway from 30 minutes to 20 minutes from 6:00am to 8:00am and 5:00pm to 9:00pm (40 minutes per branch).</li> </ul>	<ul style="list-style-type: none"> <li>Base and Peak period operates at a 15 minute headway (30 min per branch).</li> <li>Minimizes service level reduction on the two branch routes that result from route reconfiguration (Route 1A/B in Chelsea Green neighbourhood currently provides a 30 minute combined service and Southdale neighbourhood currently receives 30 minute service).</li> <li>Early evening period well above minimum productivity target.</li> </ul>
Route 6 – Richmond	<ul style="list-style-type: none"> <li>Introduce early morning Saturday service from 6:00am to 8:00pm at a 30 minute headway (60 min per branch).</li> </ul>	<ul style="list-style-type: none"> <li>Provides early morning service to Victoria Hospital, Parkwood Hospital and downtown.</li> </ul>
Route 9 – Whitehills	<ul style="list-style-type: none"> <li>Operate Route 9A/B during late evening period between 7:00pm and 11:00pm at a 30 minute headway (60 minutes per branch). This replaces Route 9C - Whitehills.</li> </ul>	<ul style="list-style-type: none"> <li>Improves service in Whitehills and Gainsborough Meadows residential neighbourhoods.</li> <li>Improves connection to downtown.</li> </ul>
Route 29 – Capulet Rd (formerly Route 10B)	<ul style="list-style-type: none"> <li>Introduce 29 on Saturday and extend to Masonville Mall. Operate at a 30 minute headway between 8:00am and 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Ridership on Route 10 - Wonderland is busiest north of Oxford Street to the University and on the weekends to Masonville Mall.</li> <li>Accommodates existing demand and supports ridership growth on the Frequent Transit Network (Sarnia Road).</li> </ul>
Route 13 – Wellington Rd.	<ul style="list-style-type: none"> <li>Reduce headway from 30 minutes to 20 minutes from 5:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Is well above the minimum productivity targets.</li> <li>Accommodates existing demand and supports ridership growth on the Frequent Transit Network and future Rapid Transit corridor.</li> </ul>
Route 14 – Highbury	<ul style="list-style-type: none"> <li>Reduce headway from 60 minutes to 30 minutes from 6:00am to 8:00am.</li> </ul>	<ul style="list-style-type: none"> <li>Provides consistent frequency all day Saturday.</li> <li>Forms part of the Strategic Corridor Network.</li> </ul>
Route 16 - Adelaide	<ul style="list-style-type: none"> <li>Reduce headway from 30 minutes to 20 minutes from 5:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Is well above the minimum productivity targets.</li> <li>Provides improved service on a Strategic Corridor.</li> </ul>



Route	Recommendation	Rationale
Route 17 – Oxford West	<ul style="list-style-type: none"> <li>Reduce headway from 60 minutes to 20 minutes from 8:00am to 10:00am and from 30 minutes to 20 minutes from 10:00am to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Provides improved service on Frequent Transit Network and Strategic Corridors.</li> <li>Improves connections to Richmond corridor and commercial areas along the corridor.</li> </ul>
Route 20 - Cherryhill	<ul style="list-style-type: none"> <li>Reduce headway from 30 minutes to 20 minutes from 9:00am to 5:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Is well above the minimum productivity targets.</li> <li>Provides improved service on Frequent Transit Network and Strategic Corridors.</li> </ul>
Route 22 – Trafalgar	<ul style="list-style-type: none"> <li>Introduce service from 6:00am to 8:00am (60 min headway) and 9:00pm to 12:00am (30 min headway).</li> <li>Reduce headway from 60 min to 30 min from 8:00am to 10:00am.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains existing service levels previously provided by Route 7 - Wavell (part of route restructuring).</li> <li>Improves connections to Argyle Mall and downtown.</li> </ul>
Route 24 – Base Line	<ul style="list-style-type: none"> <li>Introduce service from 6:30pm to 9:00pm (60 minute headway).</li> </ul>	<ul style="list-style-type: none"> <li>Improves connection to the power center at the intersection of Colonel Talbot and Southdale Road.</li> </ul>
Route 25 – Kilally	<ul style="list-style-type: none"> <li>With extended Route 25 - Kilally, introduce Saturday service on segment existing Route 25 - Kilally segment (60 minute headway between 6:00am and 10:00am and 7:00pm and 12:00am and 30 minute headway between 10:00am and 7:00pm). No change to Northridge neighbourhood.</li> </ul>	<ul style="list-style-type: none"> <li>Improves service along Highbury Avenue – major arterial.</li> <li>Improved connection to Fanshawe College and Masonville Mall.</li> <li>Improves coverage on Saturdays.</li> </ul>
Route 31 – Orchard Park	<ul style="list-style-type: none"> <li>Reduce headway from 60 min to 30 min from 6:00pm to 9:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Improves connection to power centre and Western University.</li> </ul>
Route 32 – Windermere	<ul style="list-style-type: none"> <li>With extended Route 32 - Windermere, area between Western University and Fanshawe College has new Saturday service between 6:00am and 8:00am and 9:00pm to 12:00am (60 min headway).</li> <li>Area between Fanshawe College and Argyle Mall will have reduced service level between 9:00pm and 12:00am (from 30 minute headway to 60 minute headway).</li> </ul>	<ul style="list-style-type: none"> <li>Provides connections to three major destinations: Western University, Fanshawe College and Argyle Mall.</li> <li>Connects to future Rapid Transit corridors.</li> <li>Maintains existing service level on portion of Route 14 - Highbury on Highbury Avenue with route restructuring.</li> <li>Service level reduction on portion of Route 17 – Oxford West between Fanshawe College and Argyle Mall still provides adequate service to meet existing and future demand.</li> </ul>

Route	Recommendation	Rationale
Route 35 – Argyle	<ul style="list-style-type: none"> <li>Introduce service from 5:00pm and 9:00pm (30 minute headway).</li> </ul>	<ul style="list-style-type: none"> <li>Maintains a direct connection to Argyle Mall from Trafalgar Heights with route restricting on Route 2A - Dundas.</li> </ul>
Route 40 - Grenfell (formerly Route 13 Grenfell)	<ul style="list-style-type: none"> <li>Operate early AM (6:00am to 8:00am) and evening periods (5:00pm to 12:00am) at a 30 minute headway.</li> </ul>	<ul style="list-style-type: none"> <li>Improvement from 60 minute headway operated while part of Route 13 Northridge.</li> <li>Provides consistent frequency all day Saturday.</li> <li>Potential to interline service with future introduction of Sunday service on Route 34 - Medway is demand is not warranted .</li> </ul>

### Sunday/Holiday Service Improvements

Similar to the review of Saturday service, the objective of the Sunday/Holiday service review was to improve proximity to the network (by introducing service on various routes) and reducing the number of services that operate with a 60 minute headway. Sunday service is very productive (almost the same productivity level as weekdays). This suggests a pent up demand that could be filled with improved service. Table 26 provides a summary of the proposed service level enhancements for Sunday service. The recommendations will be staged over the five year plan.

Table 25 – Sunday / Holiday Service Level Improvements

Route	Recommendation	Rationale
Route 4 – Oxford East	<ul style="list-style-type: none"> <li>Reduce headway from 30 min to 20 min (40 minute headway on each branch) from 9:00am to 7:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Route restructuring results in a service level decrease on each branch (30 minute combined service to 60 minute).</li> <li>Minimizes service reduction to 40 minute headway on each branch with improved frequency on base route where demand is highest.</li> </ul>
Route 10 – Wonderland	<ul style="list-style-type: none"> <li>Reduce headway from 60 min to 30 min from 9:00am to 7:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Supports ridership growth on the Frequent Transit Network (Sarnia Road) and Strategic Corridor.</li> <li>Meets minimum service level performance standard for a Base Arterial Route.</li> </ul>
Route 11 – Southcrest	<ul style="list-style-type: none"> <li>Reduce headway from 60 min to 30 min from 9:00am to 7:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Improves service level and connection to downtown.</li> <li>Supports ridership growth.</li> </ul>
Route 12 – Wharnccliffe South	<ul style="list-style-type: none"> <li>Reduce headway from 60 min to 30 min from 9:00am to 7:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Improves service level and connection to downtown.</li> <li>Supports ridership growth.</li> </ul>

Route	Recommendation	Rationale
Route 14 – Highbury	<ul style="list-style-type: none"> <li>Reduce headway from 60 min to 30 min from 9:00am to 7:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Improves service level along a major arterial route.</li> <li>Meets minimum service level performance standard for a Base Arterial Route.</li> </ul>
Route 17 – Oxford West	<ul style="list-style-type: none"> <li>Reduce headway from 60 min to 30 min from 9:00am to 7:00pm.</li> <li>Reduce headway from 60 min to 45 min from 7:00pm to 11:00pm.</li> <li>Reduce headway from 30 min to 20 min from 9:00am to 7:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Supports ridership growth on the Frequent Transit Network and Strategic Corridor.</li> <li>Meets minimum service level performance standard for a Base Arterial Route.</li> </ul>
Route 19 - Oakridge	<ul style="list-style-type: none"> <li>Introduce service from 9:00am to 7:00pm (60 min headway).</li> </ul>	<ul style="list-style-type: none"> <li>Provides service along Hyde Park Road with connections to the North London Plaza power centre at the southeast corner of Hyde Park Road and Fanshawe Park Road and downtown.</li> <li>The route operates above the minimum service standards for Saturday (17 boardings per revenue vehicle hour).</li> <li>Projected ridership on Sundays is expected to exceed the minimum Sunday performance standard.</li> </ul>
Route 22 – Trafalgar	<ul style="list-style-type: none"> <li>Introduce service from 9:00am to 11:00pm (30 min headway).</li> </ul>	<ul style="list-style-type: none"> <li>Maintains previous service level provided by Route 7 - Wavell as part of route restructuring.</li> <li>Improves coverage in the network.</li> <li>Projected ridership expected to exceed the minimum productivity standard.</li> </ul>
Route 24 – Base Line	<ul style="list-style-type: none"> <li>Introduce service from 9:00am to 7:00pm (60 min headway)</li> </ul>	<ul style="list-style-type: none"> <li>Provides service to commercial/retail areas.</li> <li>Improves coverage in the network.</li> <li>Projected ridership expected to exceed the minimum productivity standard.</li> </ul>
Route 26 – Jalna West	<ul style="list-style-type: none"> <li>Extend service from 6:30pm to 11:30pm (60 min headway).</li> <li>Reduce headway from 60 min to 30 min from 8:30am to 6:30pm.</li> </ul>	<ul style="list-style-type: none"> <li>Provides improved connections to White Oaks Mall.</li> <li>Provides option for Mall employees to go home after work.</li> <li>Improves coverage in the network.</li> <li>Projected ridership expected to exceed the minimum productivity standard.</li> </ul>

Route	Recommendation	Rationale
Route 31 – Orchard Park / Route 9 - Whitehills	<ul style="list-style-type: none"> <li>Route 31 – Orchard Park - Introduce service from 9:00am to 7:00pm (60 min headway).</li> <li>Change Route 9C - Whitehills back to Route 9A/B - Whitehills</li> </ul>	<ul style="list-style-type: none"> <li>Route 31 – Orchard Park provides service to Aldersbrook Road and a direct link to the North London Plaza power centre at the corner of Fanshawe Park Road and Hyde Park Road. There is no transit service to this major employment and shopping area.</li> <li>Allows Route 9C - Whitehills to change back to Route 9A/B - Whitehills which provides a more direct service to the downtown (currently 9C routes through Western University to get downtown)</li> <li>Majority of passengers on Route 9C - Westhills are likely destined to the downtown. Approximately 129 daily eastbound passengers alight at the intersection of Sarnia Road and Western Road while 130 continue to or past the University to the downtown. Route 31 – Orchard Park will continue to provide a Western connection.</li> <li>Projected ridership expected to exceed minimum productivity targets (Saturday service on operates well above the minimum standard at 29 boardings per revenue vehicle hour).</li> </ul>
Route 32 - Windermere	<ul style="list-style-type: none"> <li>Introduce service from 7:00am to 11:00pm (60 min headway).</li> </ul>	<ul style="list-style-type: none"> <li>Provides a direct connection from the Stoneybrook Acres and Ridgeview Heights neighbourhood to Western University.</li> <li>There is no Sunday service in the Stoneybrook Acres neighbourhood.</li> <li>Saturday service on Route 32 - Windermere operates well above the minimum service standard (26 boardings per revenue vehicle hour).</li> </ul>
Route 35 - Argyle	<ul style="list-style-type: none"> <li>New service from 9:00am to 7:00pm (30 min headway).</li> </ul>	<ul style="list-style-type: none"> <li>Maintains a direct connection to Argyle Mall from Trafalgar Heights with route restricting on Route 2A - Dundas.</li> </ul>



Route	Recommendation	Rationale
Route 38 – Stoney Creek	<ul style="list-style-type: none"> <li>New interlined service from 9:00am to 7:00pm (60 min headway).</li> </ul>	<ul style="list-style-type: none"> <li>Provides residents in Stoneybrook Heights with service to Masonville Mall.</li> <li>Improves coverage in the network.</li> <li>The route operates above the minimum service standards for Saturday (18 boardings per revenue vehicle hour).</li> <li>Projected ridership expected to exceed minimum productivity targets.</li> </ul>
Route 39 – Fanshawe West	<ul style="list-style-type: none"> <li>New interlined service from 9:00am to 7:00pm (60 min headway).</li> </ul>	<ul style="list-style-type: none"> <li>Connects Masonville Mall with the North London Plaza power centre at the southeast corner of Hyde Park Road and Fanshawe Park Road.</li> <li>Improves coverage in the network.</li> <li>The route operates above the minimum service standards for Saturday (26 boardings per revenue vehicle hour).</li> </ul>
Route 40 - Grenfell (formerly Route 13 Grenfell)	<ul style="list-style-type: none"> <li>Operate a 30 min headway from 9:00am to 11:00pm.</li> </ul>	<ul style="list-style-type: none"> <li>Improvement from 60 minute headway operated while part of Route 13 Northridge.</li> <li>Provides consistent frequency all day.</li> <li>Potential to interline service with future introduction of Sunday service on Route 34 - Medway is demand is not warranted .</li> </ul>

## 7.6 Service Span Improvements

London Transit is at the lower end of its peer group when it comes to service span. The majority of its peers operate longer spans of service (both earlier and later) seven days a week. This is illustrated in Table 26.

Table 26 – Average Service Span for London Transit's Peer Group

Service Period	London Transit		London Transit Peer Group	
	Start of Service	End of Service	Start of Service	End of Service
Weekday	6:00am	12:00am	4:00am to 6:00am (5:30am average)	12:30am to 2:00am (1:30am average)
Saturday	6:00am	12:00am	4:30am to 6:30am (5:30am average)	12:30am to 2:00am (1:30am average)
Sunday / Holiday	9:00am	11:00pm	6:00am to 8:00am (7:00am average)	12:00am to 1:00am (12:00am average)

As illustrated above, the areas where London Transit particularly falls below its peer group in terms of service span is on Sunday mornings and during the evening period (particularly weekday and Saturdays).

Increasing the span of service during all periods was not considered a priority given the number of revenue service hours available for expansion over the five year period. Consultation revealed a stronger desire to improve service levels during the existing span of service than to increase the overall span of service. This resulted in a number of service hours dedicated to improving peak and off-peak frequencies. For the remaining expansion hours not dedicated to service level improvements, priorities were made regarding the service span periods that should be extended (e.g. Sunday morning versus Saturday evening).

Priorities heard through the public consultation process for service span improvements were for Sunday mornings and weekday evenings. Sundays are considered a regular work day for a number of residents and a number of passengers use the transit service to access work opportunities. Weekday and Saturday evening service span increases are also important to provide options for employees working shift work or residents getting going home from social activities.

The assessment of service span in Section 6.3 revealed that Sunday morning would yield the highest return on investment followed by weekday mornings. Weekday mornings, however, are fairly close to London Transit's peer group and the consultation process did not reveal a significant demand for service during this period in the short-term.

While weekday late evening service is anticipated to be less productive than weekday early morning service, increasing the span of service by one hour into the evening would still maintain an adequate productivity rate on most routes.

Based on this analysis, it is recommended that London Transit prioritize its service span improvements to the following periods:

1. Sunday Morning: Expand service from 9:00am start to 7:00am start; and
2. Weekday / Saturday Evening: Expand service from a 12:00am to 1:00am.

Not all routes will be extended during these periods. The increase in service span was only applied to routes that meet the minimum boardings per revenue vehicle hour. Maintaining a balanced coverage in the system was also considered when selecting routes. For this reason, all Base Arterial Routes should be included in the service span extension, operating at a 30 to 60 minute headway. Base Arterial Routes are the spine of the London Transit network, connecting a number of key destinations in the system. Other routes are subject to minimum boardings per revenue vehicle hour targets being achieved.

#### Recommendation

1. Extend Sunday routes to start at 7:00am to 9:00am.
2. Extend Weekday and Saturday service to end at 1:00am from 12:00am.

Table 27 below suggests the following routes to be extended with the following headways:

Table 27 – Recommended Service Span Improvements

Route	Sunday Morning (7:00am to 9:00am)	Weekday / Saturday Evening (12:00am to 1:00am)
Route 1 – Kipps/Thompson	60 minute headway	60 minute headway
Route 2 – Dundas	30 minute headway (60 min per branch)	40 minute headway (80 min per branch)
Route 3 – Hamilton Rd.	30 minute headway (60 min per branch)	40 minute headway (80 min per branch)
Route 4 – Oxford East	30 minute headway (60 min per branch)	40 minute headway (80 min per branch)
Route 6 – Richmond	30 minute headway (60 min per branch)	40 minute headway (80 min per branch)
Route 10 – Wonderland	60 minute headway	60 minute headway
Route 11 – Southcrest	60 minute headway	60 minute headway
Route 13 – Wellington Rd.	30 minute headway (60 min per branch)	40 minute headway (80 min per branch)
Route 14 – Highbury	60 minute headway	60 minute headway
Route 15 – Westmount	60 minute headway	60 minute headway
Route 16 – Adelaide	30 minute headway (60 min per branch)	40 minute headway (80 min per branch)
Route 17 – Oxford West	30 minute headway	40 minute headway
Route 20 – Cherryhill	60 minute headway	60 minute headway
Route 21 – Huron Heights	60 minute headway	60 minute headway
Route 26 – Jalna West	60 minute headway	60 minute headway
Route 32 - Windermere	60 minute headway	60 minute headway

#### Service Hour and Vehicle Requirements

- Sunday Morning Annual Service Hour Requirements: 4,200
- Weekday and Saturday Evening Annual Service Hour Requirements: 8,300
- New Bus Purchase Requirements: 0

## 7.7 Summary of Service Level Improvements

Figure 36 below provides a summary of service level and service span improvements for 2019 on the recommended route network. The service headways highlighted in green mark a service level improvement (compared to 2014), while service headways highlighted in red show a reduction in service.

Figure 36 – Proposed Part 1 2019 Frequency (Weekday)

ROUTE NAME & NUMBER	MONDAY to FRIDAY					
	Early A.M.	A.M. Peak	Base	P.M. Peak	Early Evening	Late Evening
	6AM to 7AM	7AM to 9AM	9AM to 2PM	2PM to 6PM	6PM to 9PM	9PM to 1AM
1 Kipps / Thompson	15	15	15	15	30	30 / 60
1A 1B	-	-	-	-	-	-
2 Dundas	15	10	15	10	15	30 / 40
2A 2B	30	20	30	20	30	60 / 80
2C (ROUTE 18)	-	5	10	5	6	-
2 Sunday Extension	-	-	-	-	-	-
3 Hamilton Rd.	15	15	15	15	30	30 / 40
3A 3B	30	30	30	30	60	60 / 80
4 Oxford East	15	10	15	10	20	30 / 40
4A 4B	30	20	30	20	40	60 / 80
5 Springbank	30	30	30	30	60	60
5 After 7:00PM & All Day Sundays	-	-	-	-	60	60
6 Richmond	20	20	20	15	30	30 / 40
6A 6B	40	30	40	30	60	60 / 80
6C	-	10	15	10	30	-
7 Wavell	-	-	-	-	-	-
8 Riverside	-	-	-	-	-	-
9 Whitehills	15	15	15	15	15	15
9A 9B	30	30	30	30	30	30
9C After 6:00PM & All Day Sundays	-	-	-	-	-	-
10 Wonderland	30	20	30	20	30	30
10 After 6:00PM & All Day Sundays	-	-	-	-	30	30
10 Masonville Extension	-	-	-	30	30	-
10A	-	-	-	-	-	-
10B (ROUTE 29)	-	15	15	15	20	-
11 Southcrest	30	30	30	30	30	60
12 Wharcliffe South	30	20	30	20	30	60
13 Wellington Rd.	15	15	15	15	20	30 / 40
13A 13B	30	30	30	30	40	60 / 80
13A	-	-	-	-	-	-
14 Highbury	30	20	30	20	30	30 / 60
15 Westmount	15	15	15	15	20	30 / 60
15 After 6:00PM & All Day Sundays	-	-	-	-	20	30 / 60
16 Adelaide	15	15	20	15	30	30 / 40
16A 16B	30	30	40	30	60	60 / 80
17 Oxford West	30	20	20	20	20	30 / 40
17A 17B	-	40	-	40	-	-
17 Evenings/Sundays Eastbound Only	-	-	-	-	30	30
19 Oakridge	30	30	30	30	60	60
20 Cherryhill	20	15	20	15	20	30 / 60
21 Huron Heights	15	15	15	15	20	30 / 60
22 Trafalgar	30	30	30	30	30	30
23 Berkshire	30	30	30	30	-	-
24 Base Line	30	30	60	30	60	-
25 Kilaly	60	30	30	30	30	60
26 Jalna West	30	30	30	35	30	60
27 Fanshawe College	-	15	15	15	20	20
28 Lambeth	30	30	30	30	-	-
30 Newbold	30	30	-	30	-	-
31 Orchard Park	30	30	30	30	30	60
31 After 6:00PM Weekdays & Saturd	-	-	-	-	30	-
32 Windermere	30	30	30	30	30	60
33 Proudfoot	-	15	15	20	30	-
34 Medway	-	40	40	40	-	-
35 Argyle	30	30	30	30	30	-
36 Airport Industrial	30	30	30	30	-	-
37 Sovereign Rd.	-	30	-	30	-	-
38 Stoney Creek	30	30	30	30	30	-
39 Fanshawe West	30	30	30	30	30	-
40 Grenfell	30	30	30	30	30	30
51 Community	-	-	75	-	-	-
53 Community	-	-	75	-	-	-
54 Community	-	-	75	-	-	-
55 Community	-	-	75	-	-	-
90 Express	-	10	20	10	-	-
91 Express	-	10	20	10	-	-
92 Express	-	15	30	15	-	-



Figure 36 (continued) – Proposed Part 1 2019 Frequency (Weekend)

ROUTE NAME & NUMBER	SATURDAY					SUNDAY		
	Early A.M.	Base	Peak	Early Evening	Late Evening	Early A.M.	Base	Evening
	6AM to 8AM	8AM to 10AM	10AM to 5PM	5PM to 9PM	9PM to 1AM	7AM to 9AM	9AM to 7PM	7PM to 11PM
1 Kipps / Thompson	30	30	20	30	30	60	30	30
1A 1B	-	-	-	-	-	-	-	-
2 Dundas	30	15	15	15	30	30	30	30
2A 2B	60	30	30	30	60	60	60	60
2C (ROUTE 18)	-	-	-	-	-	-	-	-
2 Sunday Extension	-	-	-	-	-	-	30 (10AM to 6PM)	-
3 Hamilton Rd.	30	30	30	30	30	30	30	30
3A 3B	60	60	60	60	60	60	60	60
4 Oxford East	30	15	15	20	30	30	20	30
4A 4B	60	30	30	40	60 / 80	60	40	60
5 Springbank	-	60	30	60	60	-	60	60
5 After 7:00PM & All Day Sundays	-	-	-	60	60	-	30	30
6 Richmond	-	20	20	30	30 / 40	30	30	30
6A 6B	60	40	40	60	60 / 80	60	60	60
6C	-	-	-	-	-	-	-	-
7 Wavell	-	-	-	-	-	-	-	-
8 Riverside	-	-	-	-	-	-	-	-
9 Whitehills	30	30	30	30	30	-	30	30
9A 9B	60	60	60	60	60	-	60	60
9C After 6:00PM & All Day Sundays	-	-	-	-	-	-	-	-
10 Wonderland	60	30	30	30	30	60	30	60
10 After 6:00PM & All Day Sundays	-	-	-	30	30	-	-	-
10 Masonville Extension	-	-	30	30	-	-	-	-
10A	-	-	-	-	-	-	-	-
10B (ROUTE 29)	-	20	20	20	-	-	-	-
11 Southcrest	60	30	30	30	60	60	30	60
12 Wharcliffe South	60	30	30	30	60	30	30	60
13 Wellington Rd.	30	15	15	20	30 / 40	30	30	30
13A 13B	60	30	30	40	60 / 80	60	60	60
13A	-	-	-	-	-	-	-	-
14 Highbury	30	30	30	30	30 / 60	60	30	60
15 Westmount	30	30	20	30	30 / 60	60	30	30
15 After 6:00PM & All Day Sundays	-	-	-	30	30 / 60	-	60	60
16 Adelaide	30	30	20	30	30 / 40	30	30	30
16A 16B	60	60	40	40	60 / 80	60	60	60
17 Oxford West	45	20	20	20	30 / 40	30	20	45
17A 17B	-	-	-	-	-	-	-	-
17 Evenings/Sundays Eastbound Only	-	-	-	30	30	-	30	45
19 Oakridge	-	30	30	60	60	-	60	-
20 Cherryhill	45	30	20	30	30 / 60	60	30	30
21 Huron Heights	30	30	15	30	30 / 60	60	30	30
22 Trafalgar	30	30	30	30	30	-	30	30
23 Berkshire	-	30	30	-	-	-	-	-
24 Base Line	-	-	60	-	-	-	60	-
25 Kilaly	60	60	30	30	60	-	30	60
26 Jalna West	-	30	30	30	-	60	30	60
27 Fanshawe College	-	-	-	-	-	-	-	-
28 Lambeth	-	-	-	-	-	-	-	-
30 Newbold	-	-	-	-	-	-	-	-
31 Orchard Park	-	30	30	30	-	-	60	-
31 After 6:00PM Weekdays & Saturday	-	-	-	60	-	-	-	-
32 Windermere	60	30	30	60	60	60	60	60
33 Proudfoot	-	-	-	-	-	-	-	-
34 Medway	-	-	-	-	-	-	-	-
35 Argyle	-	30	30	30	-	-	30	-
36 Airport Industrial	-	-	-	-	-	-	-	-
37 Sovereign Rd.	-	-	-	-	-	-	-	-
38 Stoney Creek	-	30	30	30	-	-	60	-
39 Fanshawe West	-	30	30	30	-	-	60	-
40 Grenfell	30	30	30	30	30	-	30	30
51 Community	-	-	-	-	-	-	-	-
53 Community	-	-	-	-	-	-	-	-
54 Community	-	-	-	-	-	-	-	-
55 Community	-	-	-	-	-	-	-	-
90 Express	-	-	-	-	-	-	-	-
91 Express	-	-	-	-	-	-	-	-
92 Express	-	-	-	-	-	-	-	-

## 7.8 Five-Year Service Phasing Plan (2015-2019)

A phasing plan was developed to distribute the suggested service improvements over a five year period. The initial priority in 2015 was to continue to enhance the Express Route network, address capacity issues and underperforming routes and implement additional weekend service. The 2016 and 2017 Plan focuses more on the restricting of certain routes to help 'right-size' services and enhance connectivity to major destinations. Significant service level enhancements are added to these years as any service hour savings resulting from the route restructuring is reinvested back into the system.

The 2018 to 2019 plan continues to focus on improvements to weekend and other off-peak services and enhancements to service levels of major arterial corridors during the weekday peak periods (with the focus of building ridership). The service plan is based on the addition of approximately 17,700 new revenue service hours per year, requiring the need to prioritize certain improvements. A summary of service improvements per year over the five-year life of this plan is included in Table 28 through Table 32 below.

*While the service plan is reported by year for budgetary planning purposes, the implementation of the plan, including various components of the plan, shall be based on an annual transit service review process conducted by London Transit and subject to approved annual budgets.*

Table 28 – Proposed 2015 Route and Service Modifications

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 6A – Richmond	Weekday - Reduce headway from 15 min to 10 min from 1:30pm to 7:00pm (5.5 hours) - Fall/Winter sign-up only	465	1
Route 9 – Whitehills	Sunday - Operate Route 9A/B – Whitehills between 9:00am and 7:00pm (10 hours, 30 min combined headway - 60 min each). Replaces Route 9C - Whitehills and requires service hour increase on Route 6 to ensure clock-face scheduling.	610	0
Route 10 – Wonderland	Sunday - Reduce headway from 60 min to 30 min from 9:00am to 7:00pm (10 hours)	900	0
Route 18 – Western Rd (formerly Route 2C)	Route Modification - Split from existing Route 2A/B - Dundas to create own route.	0	0
Route 19 - Oakridge	Sunday - Introduce service from 9:00am to 7:00pm (10 hours; 60 min headway)	600	0
Route 24 – Base Line	Route Modification - Extend Route to Colonel Talbot to the west and eliminate service east of Victoria Hospital. Weekday - Reduce headway from 35 min to 30 min during weekday PM peak period.	0	0

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 29 – Capulet Lane (formerly Route 10B)	Route Adjustment - Separate Route from Route 10 - Wonderland Schedule and create own Route	0	0
Route 31 – Orchard Park	Sunday - Introduce service from 9:00am to 7:00pm (10 hours; 60 min headway).	600	0
Route 32 – Windermere	Sunday - Introduce service from 9:00am to 7:00pm (10 hours; 60 min headway).	600	0
Route 34 – Medway	Weekday - Introduce service from 9:00am to 2:00pm (5 hours, 40 min headway).	1,265	0
Route 36 – Airport Industrial	Weekday - Introduce weekday base service from 9:00am to 2:30pm (5.5 hours, 30 min headway)	1,278	0
Route 38 – Stoney Creek and Route 39 – Fanshawe West	Weekday - Increase service by 1 trip from 9:00pm to 10:00pm (1 hour, 30 min headway)	253	0
Route 91 – Express	Weekday - New peak period service from 7:00am to 11:00am and 2:00pm to 7:00pm during Spring/Summer sign-up (9 hours, 20 min headway). Weekday - New base service from 11:00am to 2:00pm (3 hours, 30 min headway).	4,127	0
Route 92 - Express	New Route - Peak Period Express Route on Adelaide between Masonville Mall and Victoria Hospital from 7:00am to 10:00pm and 3:00pm to 6:00pm (6 hours, 20 min headway).	7,084	4
TOTAL		17,782	5

Table 29 – Proposed 2016 Route and Service Level Modifications

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 1 – Kipps/Thompson	Route Modification - Eliminate Route 1 – Kipps/Thompson south of Downtown. Weekday - Reduce headway from 20 min to 15 min from 9:00am to 2:00pm.	-10,616	-3
Route 2 – Dundas	Weekday - Reduce headway from 30 min to 20 min from 7:00am to 9:00am and 2:00pm to 6:00pm (6 hours - Summer period)	1,274	0
Route 2 – Dundas	Route Modification - Split Route at Highbury Avenue (Route 2A - Dundas modification). No change to Route 2B - Dundas.	0	0

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 3 – Hamilton Rd.	Route Modification - Split tail route so one tail terminates at Argyll Mall on weekdays between 6:00am to 6:00pm and both tails terminate at Argyll Mall at all other periods. Saturday - Reduce combined headway from 60 min to 30 min from 6:00am to 8:00am (2 hours).	6,552	2
Route 4 – Oxford East	Route Modification - Split route at Baseline Road to service Chelsea Green. Saturday – Reduce headway from 60 min to 40 min from 5:00pm to 9:00pm (4 hours). Sunday – Reduce headway from 60 min to 40 min from 9:00am to 7:00pm (12 hours).	1,616	0
Route 6 – Richmond	Route Modification - Modify Route 6 - Richmond to cover portion of Route 1 – Kipps/Thompson between downtown and Victoria Hospital. Operate branch route south of downtown (Route 6A - Richmond clockwise, Route 6B - Richmond counterclockwise). Weekday – Reduce headway from 20 min to 15 min (30 min per branch) between 7:00am and 9:00am (Fall/Winter Sign-up only). Saturday - New service from 6:00am to 8:00am (2 hours, 30 min headway - 60 min per branch).	3,572	0
Route 7 – Wavell	Route Modification - Eliminate route from service.	-13,288	-3
Route 8 – Riverside	Route Modification - Eliminate route from service.	-4,588	-1
Route 10 – Wonderland	Weekday - Reduce headway from 30 min to 20 min from 7:00am to 9:00am and 2:00pm to 6:00pm (6 hours).	3,036	2
Route 10A – Wonderland	Weekday - Eliminate route from service.	-1,716	-1
Route 29 – Capulet Lane (formerly Route 10B)	Saturday - Introduce "10B" and extend to Masonville Mall from 8:00am to 9:00pm (11 hours, 30 min headway).	2,704	0
Route 11 – Southcrest	Sunday - Reduce headway from 60 min to 30 min from 9:00am to 7:00pm (10 hours).	600	0
Route 11 - Southcrest	Route Modification - Route no longer interlined with Route 7 - Wavell. Service hour adjustments.	811	0
Route 14 – Highbury	Route Modification - Terminate route at Fanshawe College terminal. Saturday - Reduce headway from 60 min to 30 min from 6:00am to 8:00am (2 hours). Sunday - Reduce headway from 60 min to 30 min from 9:00am to 7:00pm (10 hours).	-5,247	-1

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 16 – Adelaide	Saturday - Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm (4 hours)	416	0
Route 16 – Adelaide	Route Modification - Realign route to service Victoria Hospital.	0	0
Route 17 – Oxford West	Route Modification - Terminate route at Fanshawe College to the east. Split tail route at Hyde Park to service Riverside and Riverbend during AM/PM weekday peak periods. Weekday - Reduce base headway from 25 min to 20 min (5 hours). Sunday - Reduce headway from 60 min to 30 min from 9:00am to 7:00pm (10 hours). Sunday - Reduce headway from 60 min to 45 min from 7:00pm to 11:00pm (4 hours). Saturday - Reduce headway from 60 min to 45 min from 8:00am to 10:00am (2 hours).	-3,774	-1
Route 20 - Cherryhill	Saturday - Reduce headway from 30 min to 20 min from 9:00am to 5:00pm (8 hours).	832	0
Route 20 – Cherryhill	Weekday - Reduce headway from 20 min to 15 min from 7:00am to 9:00am and 2:00pm to 6:00pm (6 hours). Weekday - Reduce headway from 30 min to 20 min from 9:00am to 2:00pm (5 hours). Weekday - Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm (4 hours).	7,084	2
Route 22 - Trafalgar	Route Modification - Realign route to cover Wavell Street. Weekday - Introduce service from 6:00pm to 12:00pm (6 hours, 30 min headway). Saturday - Introduce service from 6:00am to 8:00am (2 hours, 60 min headway) and 9:00pm to 12:00am (3 hours, 30 min headway). Saturday – Reduce headway from 60 min to 30 min from 8:00am to 10:00am (2 hours). Sunday - Introduce service from 9:00am to 11:00pm (14 hours, 30 min headway).	5,474	0
Route 27 – Fanshawe College	Weekday - Reduce headway from 20min to 15 min from 7:30am to 6:00pm (10.5 hours - Fall/Winter sign-up only).	1,722	1
Route 28 – Lambeth	Route Modification – Shorten route to Sunray Avenue	0	0
Route 30 - Newbold	Weekday - Increase service by 2 additional trips in the AM peak and 2 additional trips in the PM peak (2 hours).	506	0



Route	Recommendation	Service Hour Impact	New Peak Buses
Route 32 – Windermere	Route Modification - Extend route to Argyll Mall (120 min run time). Weekday - Introduce service from 9:00pm to 11:00pm (2 hours, 30 min headway). Weekday - Introduce service from 11:00pm to 12:00am (1 hour, 60 min headway). Weekday - Reduce headway from 60 min to 30 min from 6:00pm to 9:00pm (3 hours). Saturday - Introduce service from 6:00am to 8:00am and 9:00pm to 12:00pm (5 hours, 60 min headway). Sunday - Introduce service from 7:00pm to 11:00pm (15 hours, 60 min headway).	12,941	2
Route 34 - Medway	Weekday - Increase headway from 30 min to 40 min to address schedule adherence. Route modification - Realign route to McGarrell.	0	0
Route 35 – Argyll	Route modification - Realign route to provide Route 2A - Dundas passengers with service to Argyll Mall. Weekday - Introduce service from 6:00pm to 9:00pm (3 hours, 30 min headway). Saturday - Introduce service from 5:00pm and 9:00pm (3 hours, 30 min headway). Sunday - New service from 9:00am to 7:00pm (10 hours, 30 min headway).	1,404	0
Route 38 – Stoney Creek and Route 39 – Fanshawe West	Sunday - New interlined service from 9:00am to 7:00pm (10 hours; 60 min headway).	600	0
Route 90 – Express	Weekday - Reduce headway from 20 min to 15 min from 7:00am to 11:00am and 2:00pm to 7:30pm (9.5 hours).	2,016	2
Route 92 - Express	Weekday - New base service from 10:00am to 3:00pm (5 hours, 30 min headway). Weekday - Extend PM peak service by 1 hour from 6:00pm to 7:00pm (20 min headway).	3,795	0
TOTAL		16,628	1

Table 30 – Proposed 2017 Route and Service Level Modifications

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 4 – Oxford East	Route Modification - Modify route south of Southdale Road	0	0
Route 40 - Grenfell (formerly Route 13 Grenfell)	Route Modification - Split Route 13 - Grenfell from Route 13 – Wellington Rd. and create own route. Extend to Stackhouse Avenue as area develops. Weekday - Operate a 30 min headway from 6:00am to 12:00am (18 hours) Saturday - Operate a 30 min headway from 6:00am to 12:00pm (18 hours) Sunday - Operate a 30 min headway from 9:00am to 11:00pm (14 hours)	6,330	1
Route 13 – Wellington Rd.	Route Modification - Terminal route at Masonville Mall to the north. Create a second split tail to the south west of Wellington Road (13B) Weekday - Reduce headway from 30 min to 20 min from 6:00pm to 9:00pm (3 hours). Saturday - Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm (4 hours).	-4,729	-2
Route 25 - Kilally	Route Modification - Extend route to travel to Masonville Mall via Glenora Drive and Fanshawe Park Road. Weekday - Introduce service from 6:00am to 7:00am and 9:00pm to 12:00pm (4 hours, 60 min headway). Saturday – Introduce service from 6:00am to 10:00am and 7:00pm to 12:00am (11 hours, 60 min headway) and from 10:00am to 7:00pm (9 hours, 30 min headway). Sunday – Introduce service from 9:00am to 11:00pm (15 hours, 60 min headway).	6,694	1
Route 26 – Jalna West	Route modification - Realign route east of Wharncliffe Road.	0	0
Route 90 – Express	Weekday – Reduce headway from 15 min to 10 min from 7:00am to 11:00am and 2:00pm to 7:30pm (9.5 hours). Weekday - Reduce headway from 30 min to 20 min from 11:00am to 2:00pm (3 hours)	6,705	3
Route 91 - Express	Weekday - Reduce headway from 20 min to 15 min from 7:00am to 11:00am and 2:00pm to 7:30pm (9.5 hours).	2,488	1
TOTAL		17,488	4

Table 31 – Proposed 2018 Route and Service Level Modifications

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 18 – Western Rd (formerly Route 2C)	Weekday - Reduce headway from 6 min to 5 min from 8:00am to 9:00am and from 2:00pm to 6:00pm (6 hours).	780	1
Route 9 – Whitehills	Weekday - Operate Route 9 - Whitehills at a 30 min headway between 7:00pm and 11:00pm (4 hours, 60 min headway for 9A and 9B - combined 30 min). Replaces Route 9C - Whitehills and requires service hour increase on Route 6 - Richmond to ensure clock-face scheduling.	956	0
Route 9 - Whitehills	Saturday - Operate Route 9 – Whitehills at a 30 min headway between 7:00pm and 11:00pm (4 hours, 60 min headway for 9A and 9B - combined 30 min). Replaces Route 9C - Whitehills and requires service hour increase on Route 6 - Richmond to ensure clock-face scheduling.	191	0
Route 12 – Wharnccliffe South	Sunday - Reduce headway from 60 min to 30 min from 9:00am to 7:00pm (10 hours).	630	0
Route 14 – Highbury	Weekday - Reduce headway from 30 min to 20 min from 7:00am to 9:00am and 2:00pm to 6:00pm (6 hours).	1,645	1
Route 15 – Westmount	Weekday - Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm (4 hours).	759	0
Route 17 – Oxford West	Saturday - Reduce headway from 30 min to 20 min from 8:00am to 9:00pm (13 hours).	1,352	0
Route 17 – Oxford West	Weekday - Reduce headway from 30 min to 20 min from 6:00pm to 9:00pm (3 hours).	506	0
Route 21 – Huron Heights	Weekday - Reduce headway from 30 min to 20 min from 5:00pm to 9:00pm (4 hours).	759	0
Route 25 – Kilally	Sunday - Reduce headway from 60 min to 30 min from 9:00am to 7:00pm (10 hours).	600	0
Route 25 – Kilally	Saturday - Reduce headway from 60 min to 30 min from 5:00pm to 9:00pm (4 hours).	208	0
Route 25 - Kilally	Weekday - Reduce headway from 60 min to 30 min from 6:00pm to 9:00pm (3 hours).	759	0
Route 26 – Jalna West	Sunday - Extend service from 6:30pm to 11:30pm (5 hours, 60 min headway). Sunday - Reduce headway from 60 min to 30 min from 8:30am to 6:30pm (10 hours).	900	0
Route 26 – Jalna West	Weekday - Extend service from 10:00pm to 11:00pm (60 min headway, 1 hour).	253	0

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 31 – Orchard Park	Weekday - Reduce headway from 60 min to 30 min from 6:00pm to 11:00pm; Introduce service from 11:00pm to 12:00am (60 min headway, 1 hour).	1,518	0
Route 31 – Orchard Park	Saturday - Reduce headway from 60 min to 30 min from 6:00pm to 9:00pm (3 hours).	312	0
Route 91 - Express	Weekday - Reduce headway from 15 min to 10 min from 7:00am to 11:00am and 2:00pm to 7:30pm (9.5 hours). Weekday - Reduce headway from 30 min to 20 min from 11:00am to 2:00pm (3 hours).	5,608	2
TOTAL		17,692	4

Table 32 – Proposed 2019 Route and Service Level Modifications

Route	Recommendation	Service Hour Impact	New Peak Buses
Route 17 – Oxford West	Sunday - Reduce headway from 30 min to 20 min from 9:00am to 7:00pm (10 hours).	1,200	0
Route 24 – Base Line	Sunday - Introduce service from 9:00am to 7:00pm (10 hours; 60 min headway).	600	0
Route 24 – Base Line	Saturday - Introduce service from 6:30pm to 9:00pm (2.5 hours, 60 min headway).	130	0
Route 31 – Orchard Park	Route Modification - Realign route to Tokala Trail.	0	0
Route 92 – Express	Weekday - Reduce headway from 20 min to 15 min from 7:00am to 10:00am and 2:00pm to 7:00pm (8 hours).	3,542	1
System-wide	Service Hour Change - Extend Sunday routes to start at 7:00am to 9:00am system-wide (same headway as 9:00am run) - (Routes 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 26, 32)	4,200	0
System-wide	Service Hour Change - Extend Weekday routes to end an hour later from 12:00am to 1:00am system-wide (same headway as hour prior).	8,300	0
TOTAL		15,722	1

## 7.9 Summary and Next Steps

The five-year route and service plan and proposed service standards document presented above presents a strategic roadmap to help guide investment in the London Transit system over the next five years.

As an initial step, the recommended transit service standards contained in **Section 5.0** of this report should be formalized as a separate Service Standards document. The formal document should be used to monitor performance of existing transit routes and guide the development of future modifications, including route and service level recommendations proposed in this plan.

The five-year route and service plan is recommended to be used as an overarching guide to the annual service planning process. The plan identifies strategies to make better use of existing resources and recommended improvements to the system. The level of investment was based on adding an additional 17,700 of revenue service hours annually. This is consistent with the growth in service hours identified in the London Transit 2015-2018 Business Plan.

Moving forward, recommended route modifications and new investments contained within this plan will be reassessed annually as part of London Transit's annual service planning process. This will include a more detailed review of recommended modifications based on updated performance data, population/employment growth projections and public comments. At this point, detailed projections will be developed for annual service hour increases, operating costs and revenues and ridership growth. This will include a further level of community consultation in areas that are impacted by the proposed service modifications.





# APPENDIX A

## Summary of On-Line Survey Results





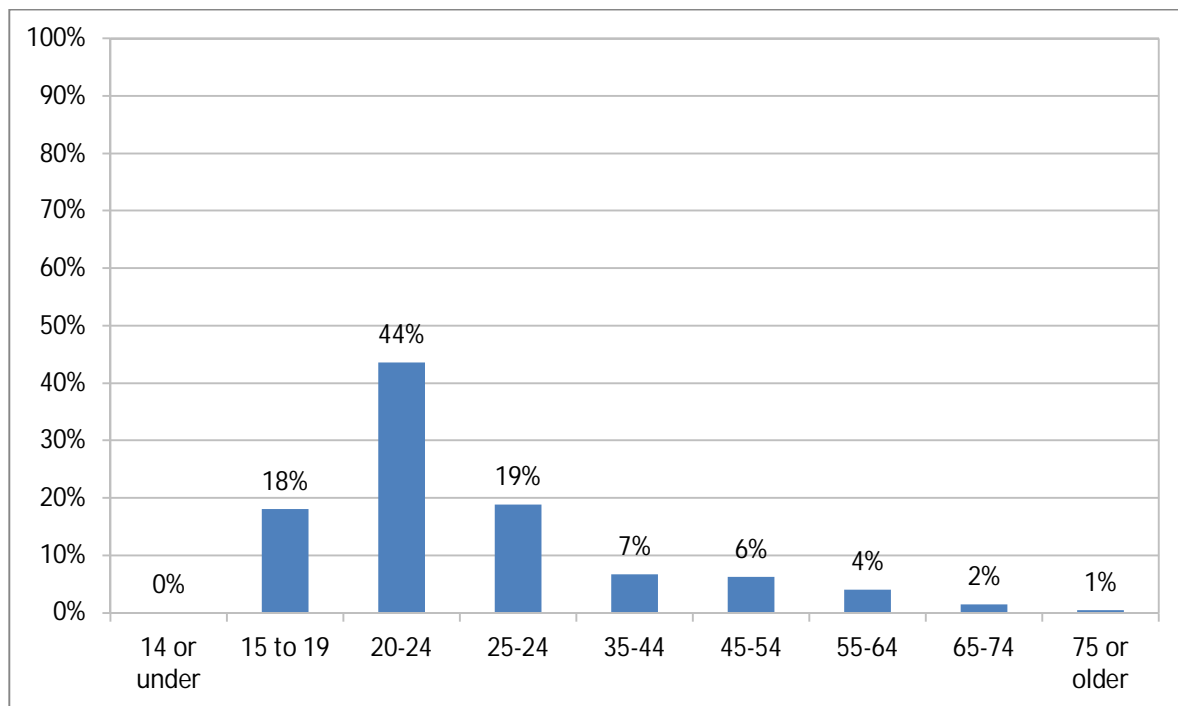
## Appendix A – On-line Survey Summary

An online survey for transit users and non-users was available via the London Transit Commission website from July 10<sup>th</sup> until November 15<sup>th</sup>, 2014 to gather information on what influences existing travel choices, trip making habits as well as opinions about current London Transit services and suggestions for the future.

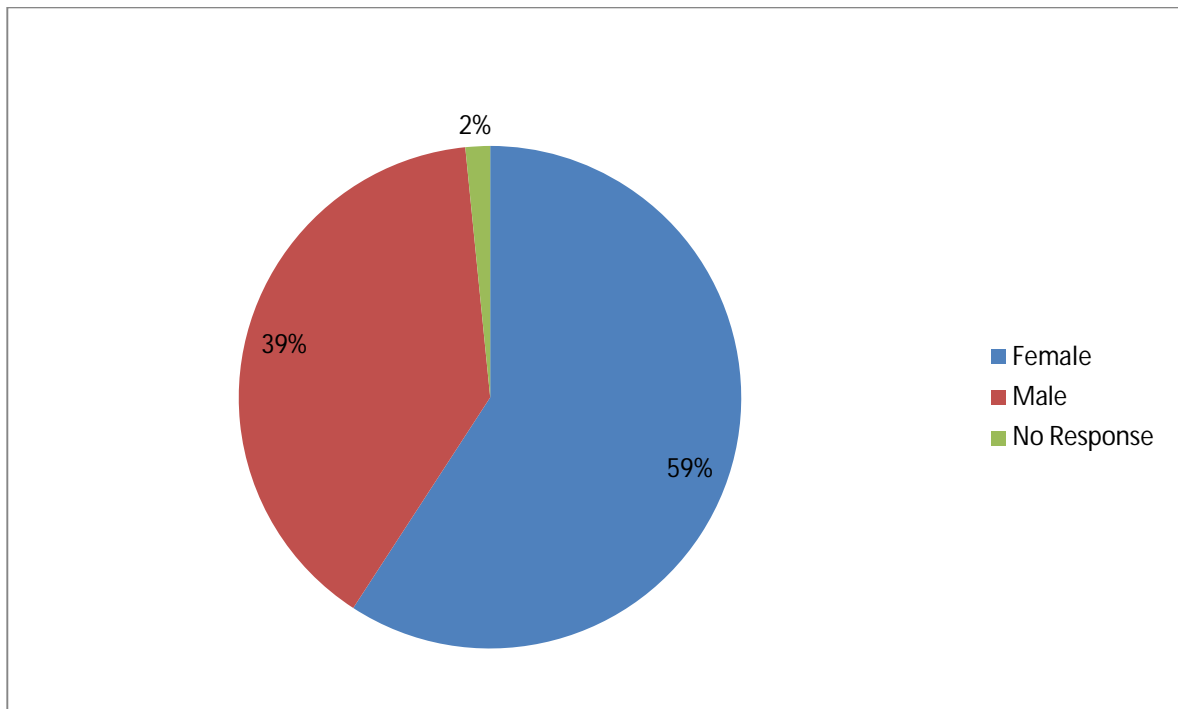
The online survey yielded 3,363 complete responses that were used to inform the study. Each of the questions asked and the survey results are summarized below:

### General

#### 1. What is your age?

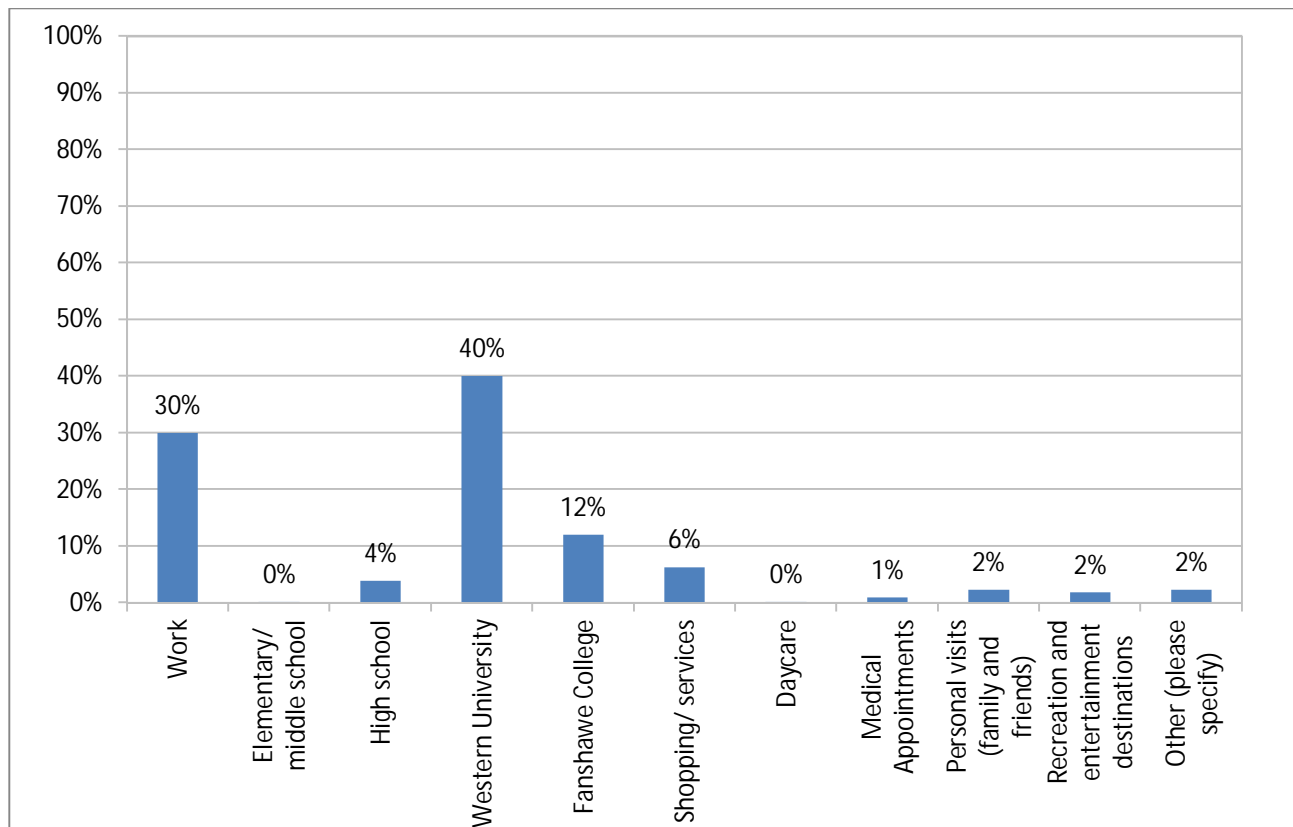


2. What is your gender?



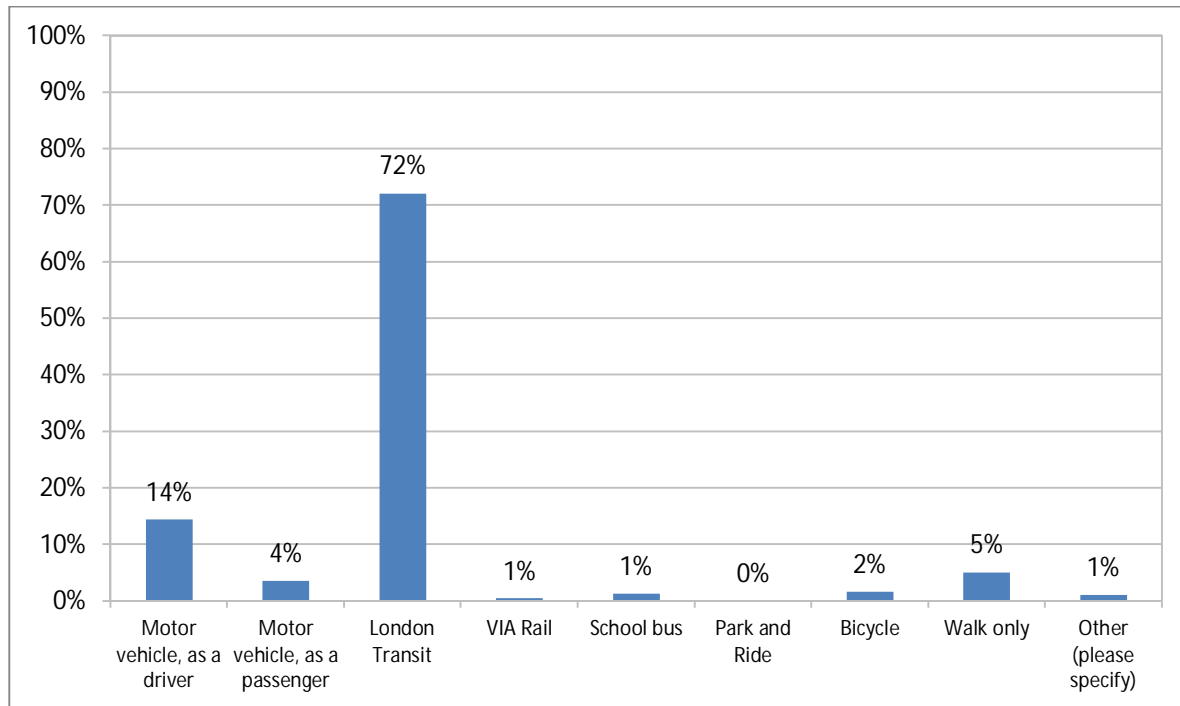
3. What is your home postal code?

4. Think back to last fall/winter. On an average weekday, the most common trip I made is from my home to...

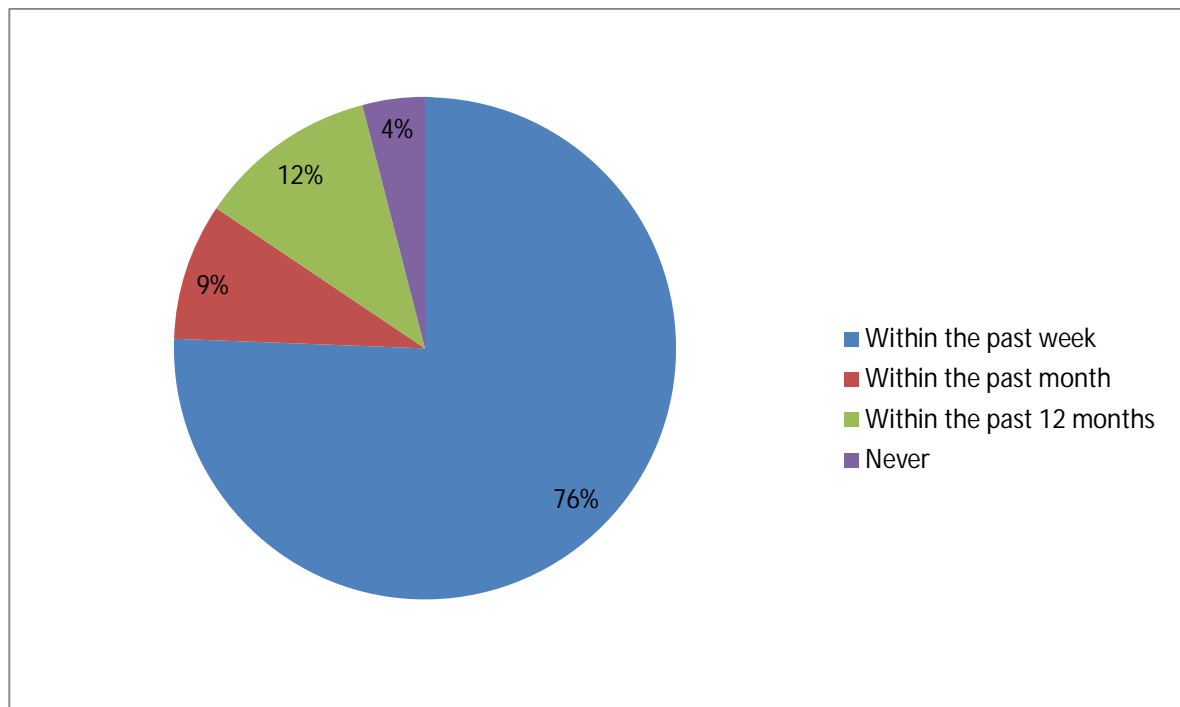




5. How did you usually travel from home to your most common trip identified above?

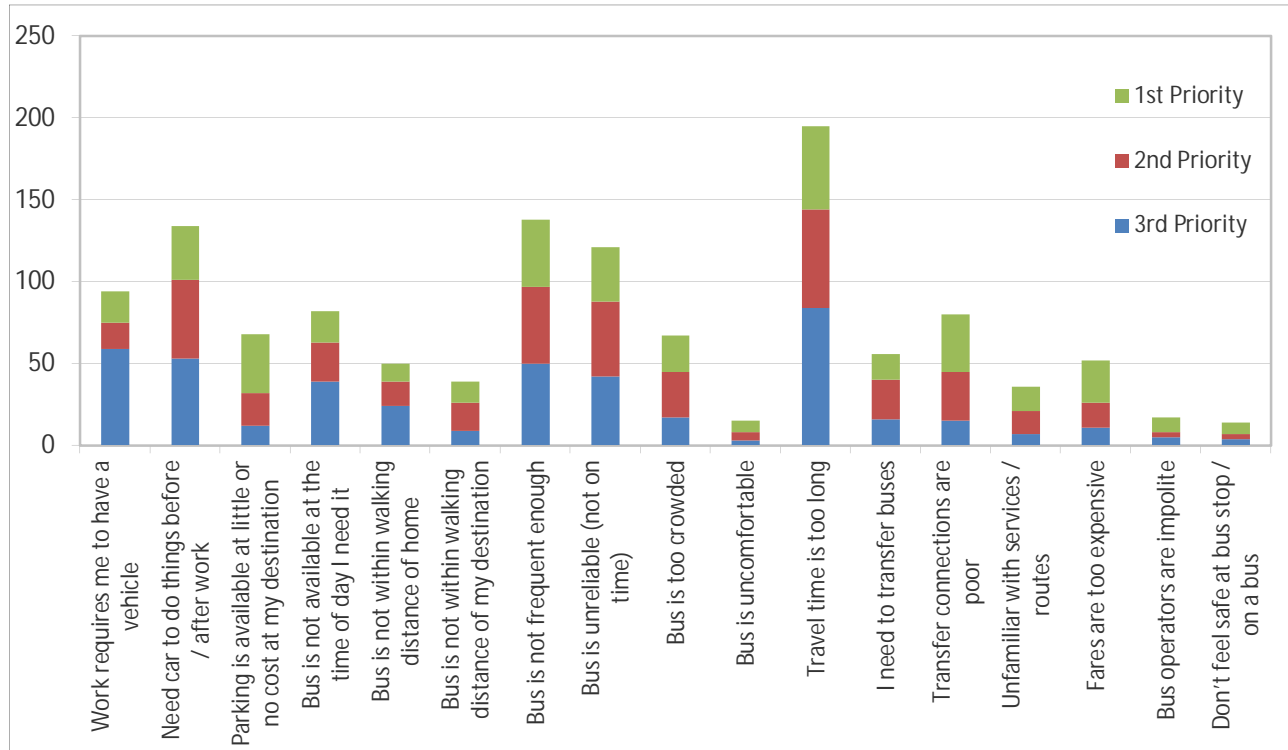


6. When was the last time you used London Transit?



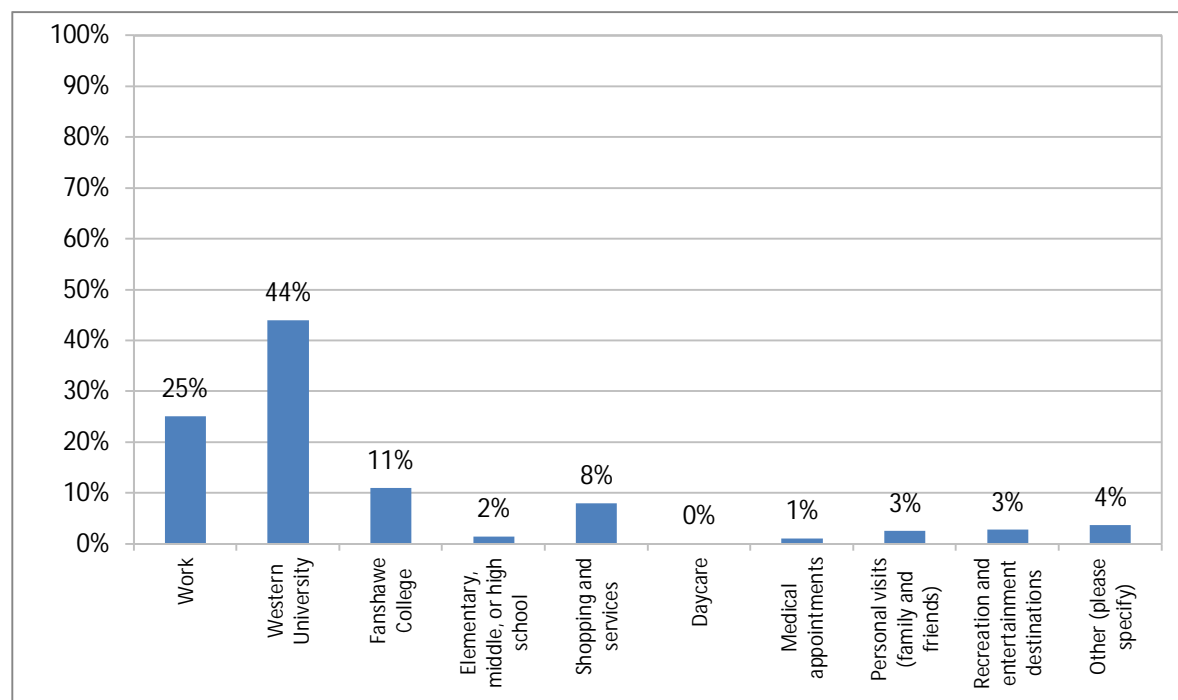
## Non Rider Survey

7. What are your main reasons for NOT using London Transit over other forms of transportation?  
(choose up to 3 in order of priority)



## Rider Survey

### 8. What is your main destination when using London Transit?



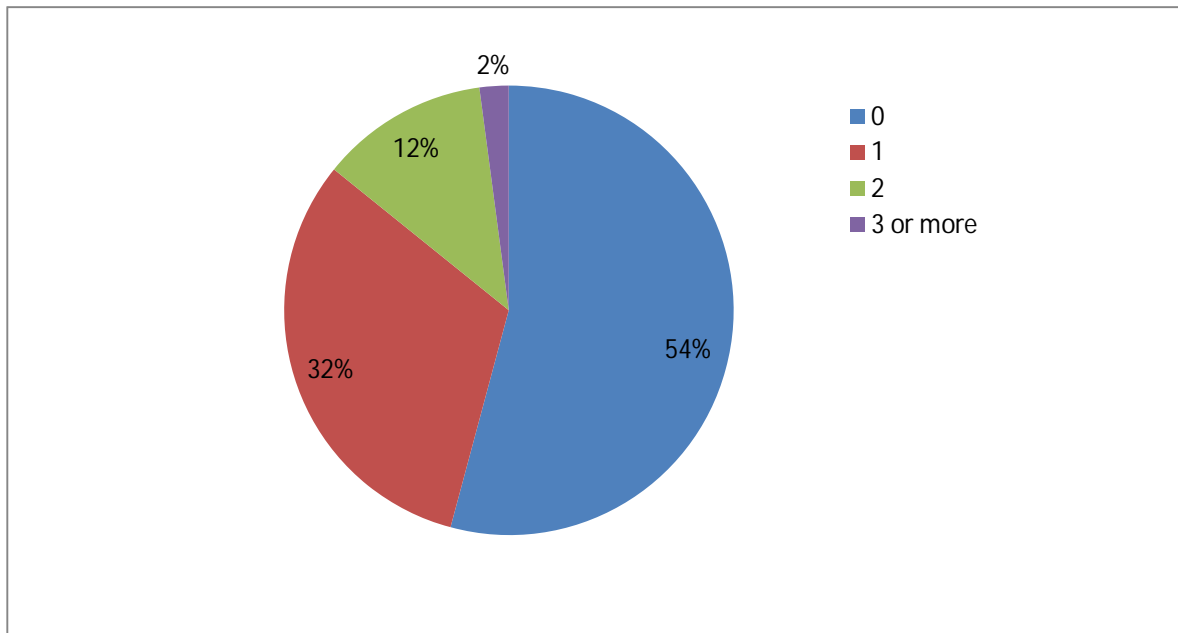
### 9. Which London Transit routes do you use most often? (choose up to three)

Answer Options	Response Percent
13 Wellington	35%
2 Dundas	32%
10 Wonderland	27%
6 Richmond	26%
4 Oxford East	17%
17 Oxford West	17%
16 Adelaide	11%
9 Whitehills	10%
20 Cherryhill	9%
1 Thompson Kipps Lane	8%
14 Highbury	7%
21 Huron Heights	6%
15 Westmound	5%
31 Orchard Park	5%

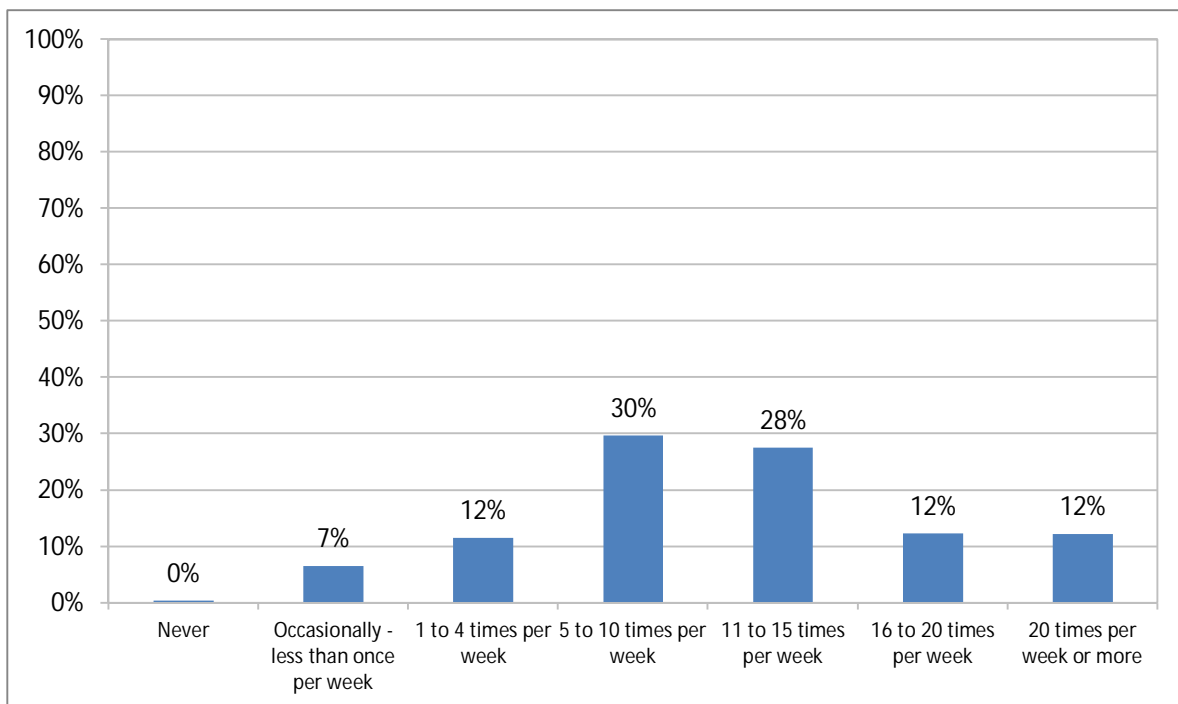
Answer Options	Response Percent
90 Express	4%
27 Fanshawe College	4%
32 Windermere	3%
3 Hamilton Rd	3%
7 Wavell	3%
19 Oakridge	3%
26 Jalna Blvd	3%
12 Wharncliffe	3%
5 Springbank	3%
33 Proudfoot	3%
11 Southcrest	2%
39 Fanshawe West	2%
23 Berkshire	2%
38 Stoney Creek	2%
25 Kilally	1%
34 Medway	1%
22 Trafalgar	1%
35 Argyle	1%
36 Airport Industrial	1%
8 Riverside	1%
24 Baseline	1%
28 Lambeth	1%
30 Newbold	0%
51, 53, 54, 55 Community Bus	0%
37 Sovereign Road	0%

*Note: Percentages do not equal 100 as respondents could choose up to three answers.*

**10. How many transfers do you need to make to complete your primary trip?**

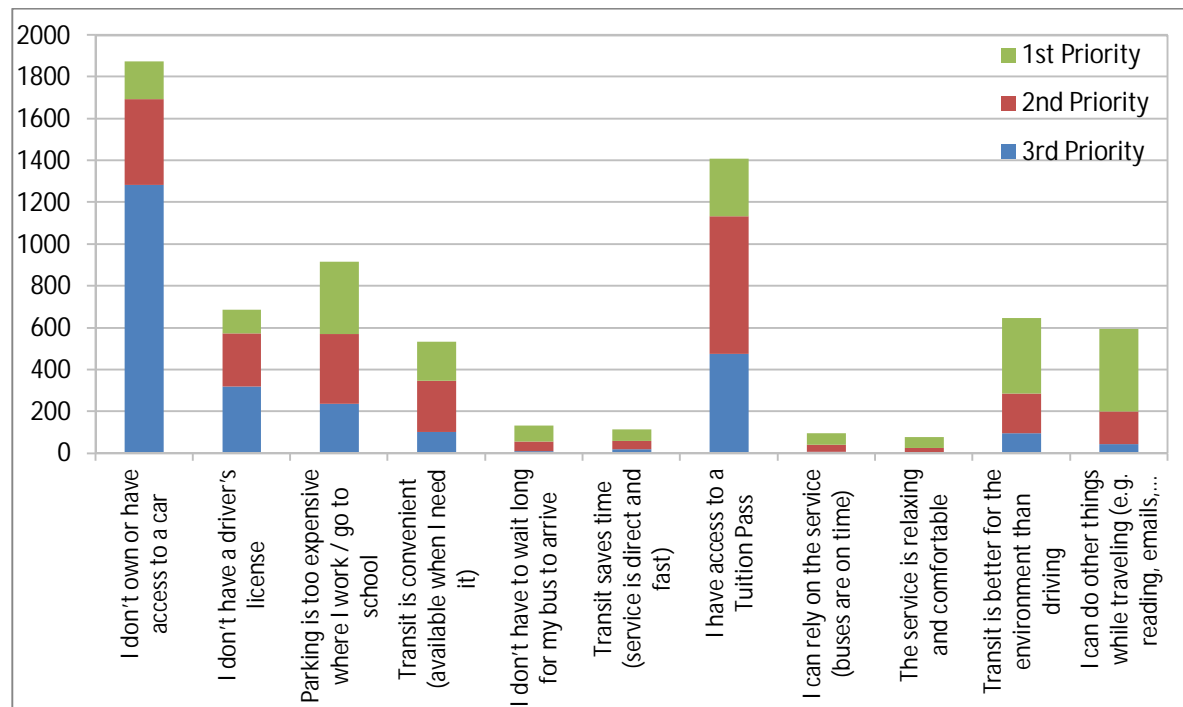


**11. On average, how many times per week do you use London Transit? Keep in mind that a round trip is considered 2 times, and a one-way trip is considered one time.**





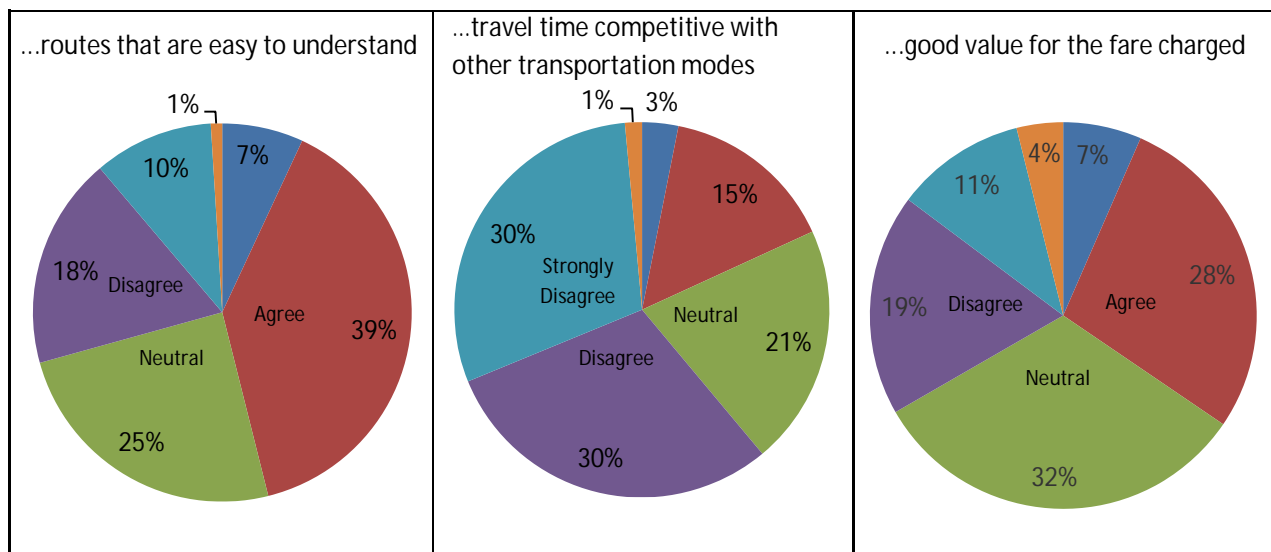
**12. What are your reasons for using London Transit over other forms of transportation? Please identify your top three (3) in order of priority.**



## Opinions of Existing London Transit Services (Riders and Non-Riders)

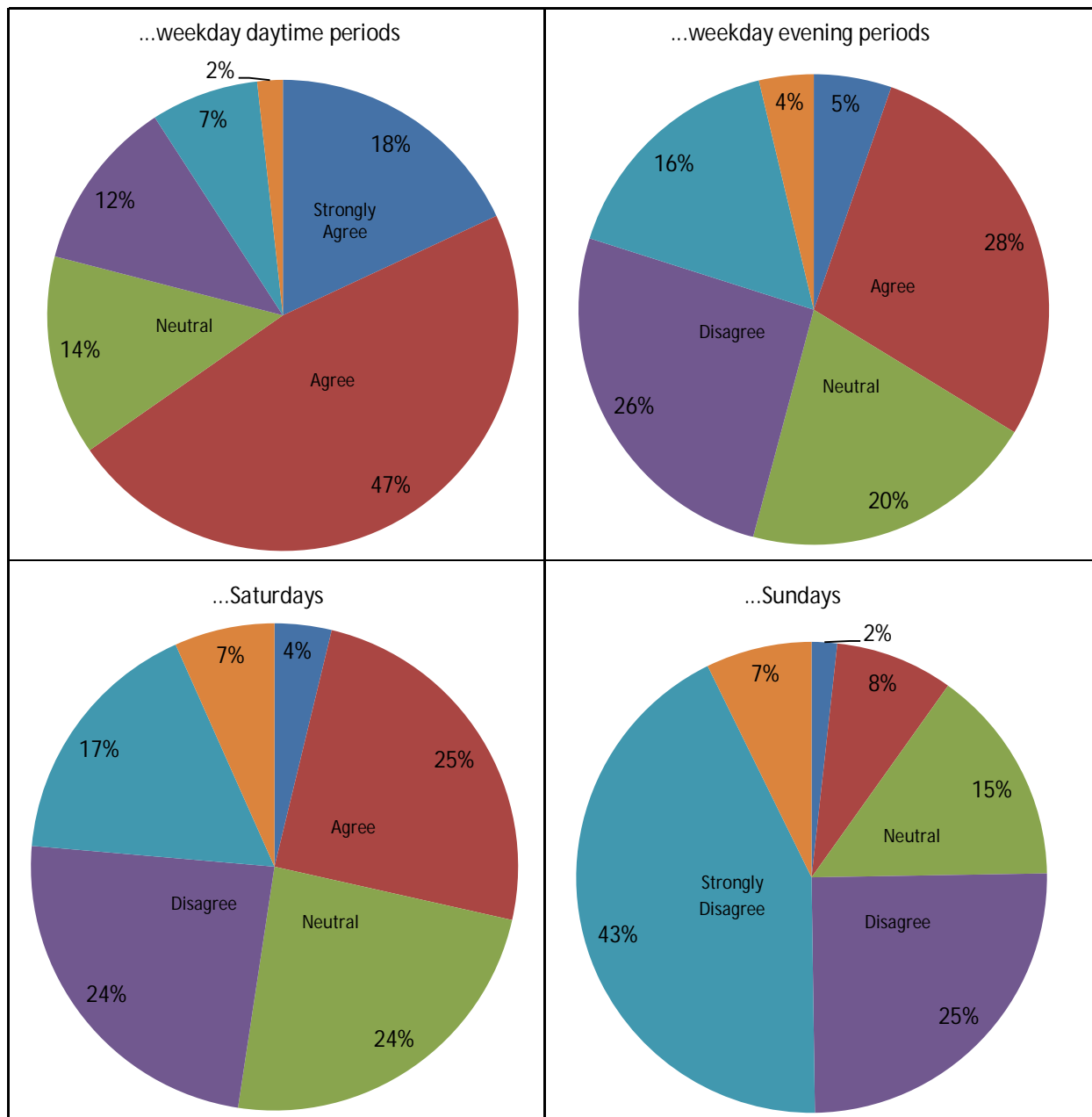
### 13. London Transit provides...

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree
- Don't know



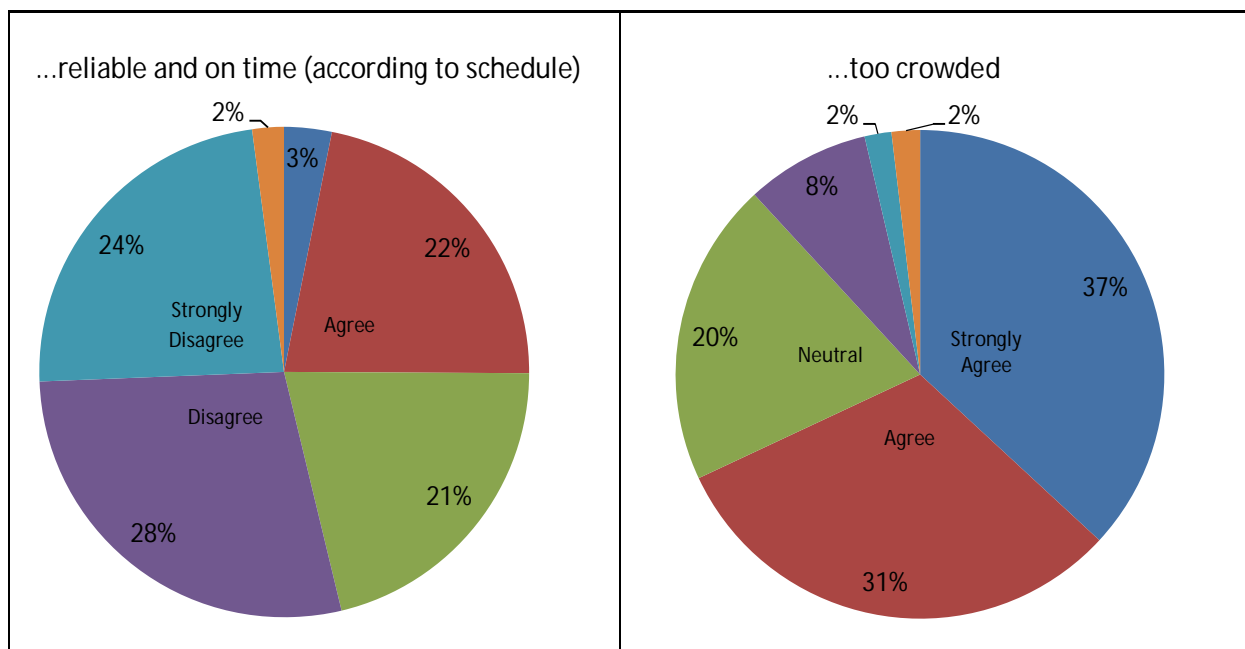
14. Transit is available when I need it most for the most frequent trip I make during...

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree
- Don't know

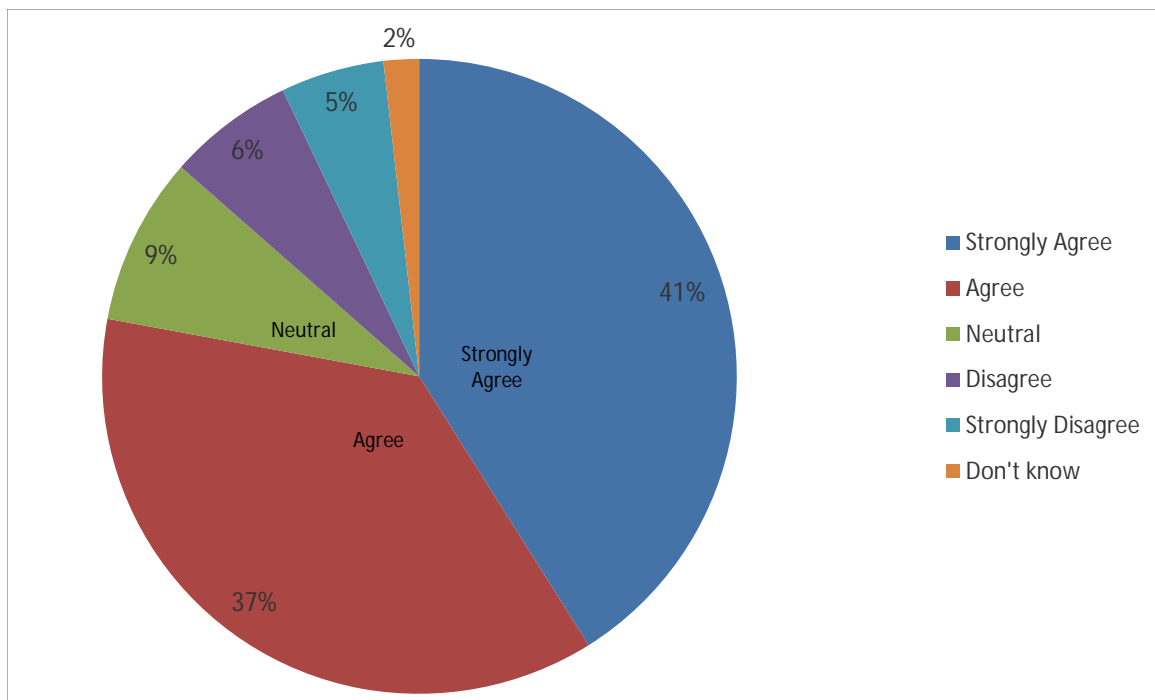


## 15. Buses are...

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree
- Don't know



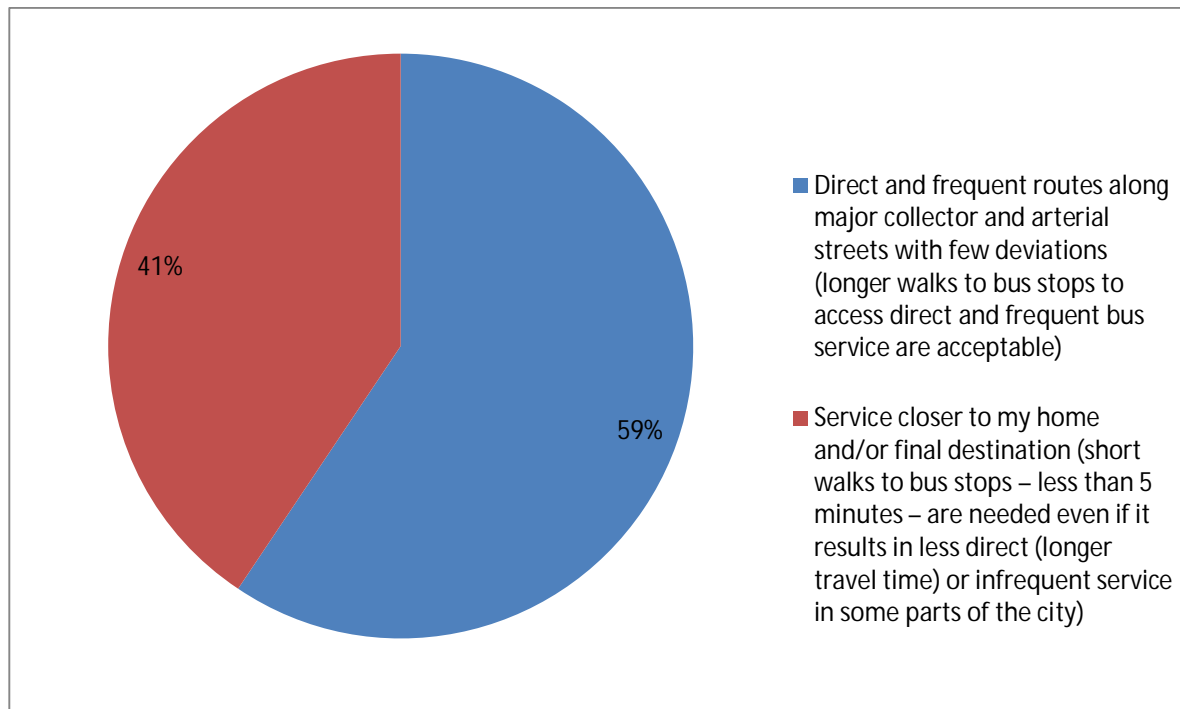
**16. The transit route I most frequently take is within a close walking distance home**



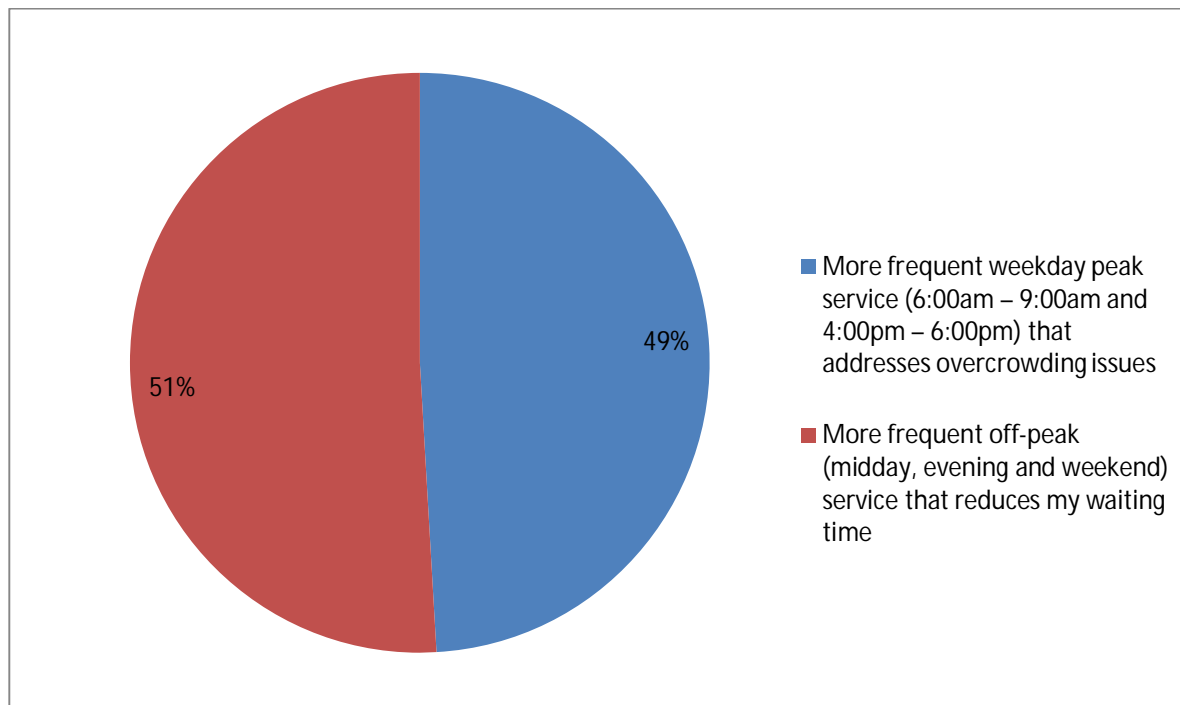


## Shaping the Future of London Transit (Riders and Non-Riders)

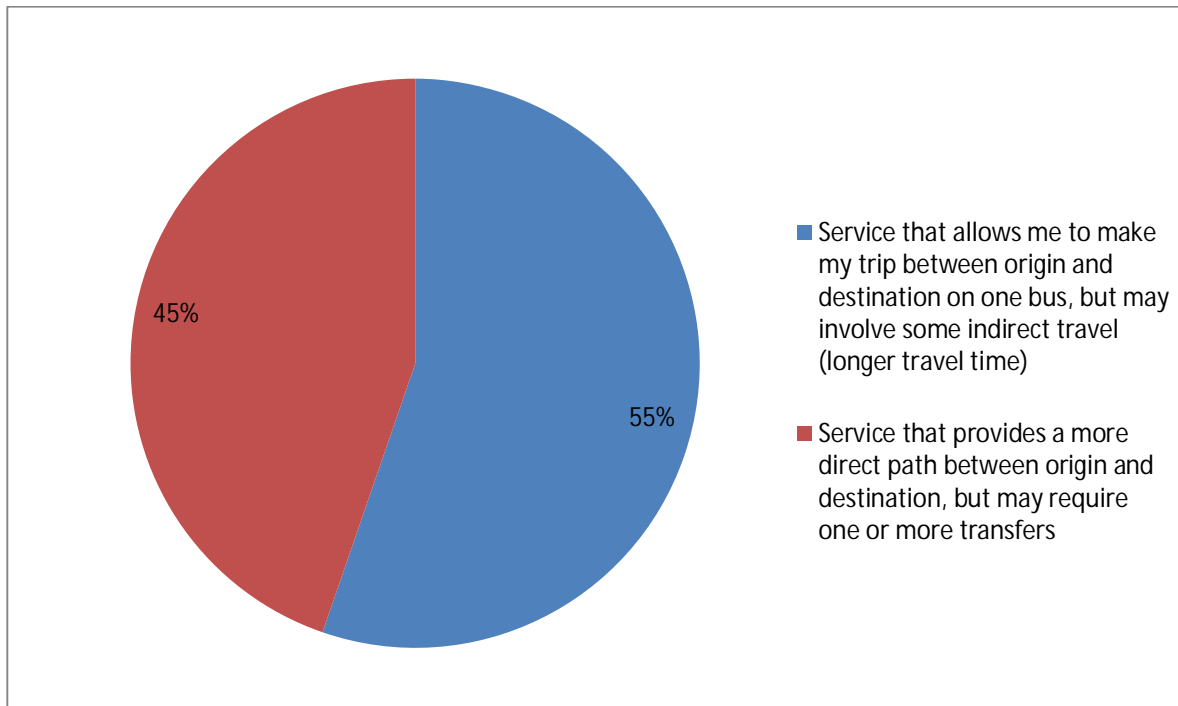
### 17. Direct Travel vs. Shorter Walking Distance . . . I prefer:



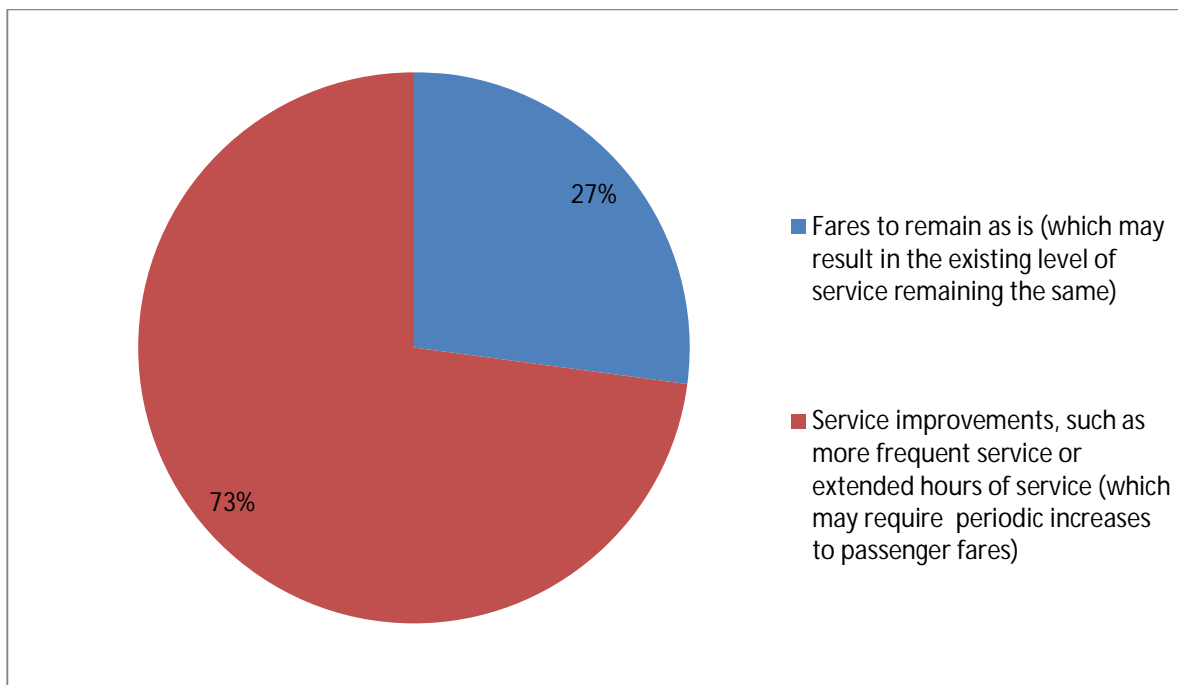
### 18. Peak Period Service vs. Off-Peak Service . . . I prefer:



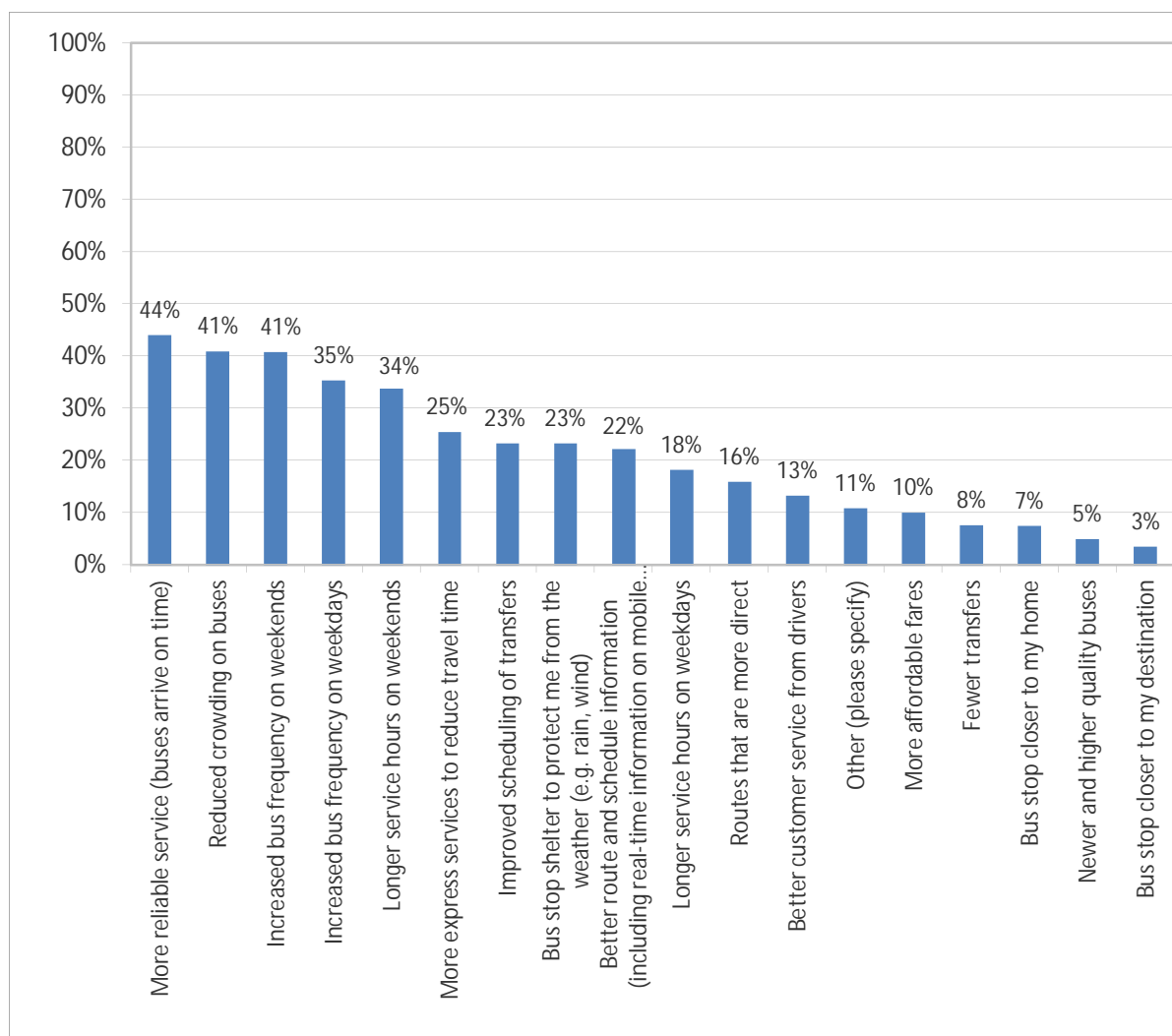
**19. Connections vs. Direct Travel . . . I prefer:**



**20. Current Fares vs. Service Improvements . . . I prefer:**



**21. Identify the top four improvements that would get you to use London Transit more often (choose up to 4).**



*\*Percentages do not equal 100 as respondents could choose up to four answers.*



# APPENDIX B

## Summary of Public Drop-In Centre #2 Comments







## Appendix B – April 8<sup>th</sup>, 2015 Public Drop-In Centre Comments

The following presents a summary of comments received at the public drop-in centre held on April 8<sup>th</sup>, 2015. The public drop-in centre presented the preliminary recommendations for the proposed five-year service plan. Comments were received directly from attendees, through comments sheets provided at the drop-in centre and by email and phone calls. The comments were generally positive. Specific issues are identified below including how they were addressed.

Summary of Consultation Feedback on Preliminary Study Recommendations

Comments	Number of Comments	Response
<b>Span of Service</b>		
Would like to see the extended Sunday morning service implemented earlier in the plan as opposed to the end of plan.	4	Felt priority should be to address crowding and limited service levels during the off-peak periods before extending service to new areas.
Would like to see later service on weekdays and Saturday implemented earlier in the plan as opposed to at the end.	2	
Positive comments towards extending service to 1:00am on key routes and extending Sunday morning service.	4	Noted.
Request for weekday service to be extended to 2:00am for people who work night shifts.	1	Service recommended to be extended to 1:00am on weekends and Saturdays.
<b>Route 1 Thompson Kipps Lane / Route 6 Richmond</b>		
Concerned about transfer between Route 1 and 6 on Sundays with route modification.	1	Route modification resulted in savings of service hours which were reinvested back into the system. Felt to be a higher benefit. Schedules will be modified to limit waiting time for transferring passengers.
<b>Route 2 Dundas</b>		
Positive comments toward increase in service on Route 2.	3	Noted.
Request for express service on Dundas Street.	1	Ridership on Dundas is spread evenly along the corridor which limits the ability to skip stops to provide an Express service.
Request that Route 2A continue to service Argyle Mall.	1	Route 35 will be modified to cover residential neighbourhood previously serviced by Route 2A and directly service Argyll Mall.
<b>Route 3 Hamilton Rd</b>		
Positive comments regarding Route 3 changes.	2	Noted.

Comments	Number of Comments	Response
<b>Route 4 Oxford East</b>		
Positive comments on changes – likes direct service to the mall.	3	Noted.
Concerns regarding the proposed 4B alignment change. Does not like the one way loop.	2	Route 3 and Route 26 modifications will help provide more direct service.
Concerns with the removal of the route from Dundalk Drive.	1	Dundalk will now be serviced by Route 26, providing direct service to downtown.
<b>Route 5 Springbank</b>		
Request for later service on Route 5 (after 7:00pm).	1	Lower ridership on this route. Service extension into the evening may not meet minimum productivity standards.
<b>Route 6 Richmond</b>		
When Route 6 change is made, both A and B should have a 15 minute frequency.	1	The ridership south of downtown would not warrant 15 minute service on each loop.
<b>Route 8 Riverside</b>		
Request for all-day service on Route 8.	2	Route 8 does not meet minimum productivity standards.
<b>Route 9 Whitehills / Route Wonderland</b>		
Positive comments regarding service increases on Route 10, Route 9.	2	Noted.
Request to make Route 10 and Route 14 a loop.	1	Route 10 already interlines with Route 14 at White Oaks Mall.
Transferring between Route 10 and Route 9 is difficult.	1	Frequency improvements to Route 10 should reduce waiting time.
<b>Route 13 Wellington / Route 21 Huron Heights</b>		
Route 13/Route 21 never makes the transfer at Cheapside.	1	Frequency improvements to Route 13 and 21 should reduce waiting time.
<b>Route 14 Highbury</b>		
Don't like Route 14 going to Fanshawe College. Would require a transfer when going from Kipps Lane to White Oaks Mall. Make this trip once a week.	1	Modification to Fanshawe College will benefit more passengers than those continuing through along Highbury. Service is still maintained via transfer.
Wants improved Sunday/Holiday schedule	1	Five year plan recommends an increased Sunday/Holiday frequency from 60 min to 30 min.

Comments	Number of Comments	Response
<b>Route 19 Oakridge / Route 31 Orchard Park</b>		
Positive comments for Sunday service on Route 19 and 31.	2	Noted.
Would like Route 19 to leave downtown earlier at 6:10am instead of 6:25am. Allows people to get to work by 7:00am.	1	Noted.
<b>Route 24 Baseline</b>		
Positive comments towards Route 24 changes.	8	Noted.
Negative comments towards Route 24 changes.	6	Passengers east of Wellington Road can use Route 16 to gain access to downtown.
Negative comments, but okay with the change when informed about the 16.	1	Noted.
Would like service to a YMCA that will be built within four years at Southdale Rd, west of Wonderland at Bostwick Rd (Route 24 the closest route).	2	Noted.
<b>Route 26 Jalna Blvd</b>		
Positive comments on changes – likes direct service to the mall.	2	Noted.
Concerns regarding the re-alignment. Does not like the move off of Jalna St south of Bradley Ave due to walking distance concerns and unsafe crossing of a Bradley Ave (there is no traffic signal mid-block on this busy street).	3	Route 13 adjustment will limit walking distance for passengers. Two-way service is not provided on Bradley Avenue.
Concerns that the re-alignment will affect commuters heading downtown.	1	Route 4 and Route 13 continue to provide direct downtown access.
<b>Route 28 Lambeth / Route 12 Wharnccliffe</b>		
Request for more service to Lambeth particularly by the Exeter Business Area.	1	Route 28 does not meet minimum productivity standards and would not warrant increased service.
Concerns regarding the extension to Lambeth – this will add travel time to those travelling around the existing Route 12 loop.	3	Route has been modified to reflect concerns noted from the public.
Would like to see Route 28 go north on Colonel Talbot Road to No-Frills and apartment buildings at Southdale and connect to Westmount Mall.	2	The travel time would be too long and the route would not facilitate transfers at Westmount Mall.
Request for service to the South Winds subdivision.	2	Does not meet minimum service standards (extension of new services).
Like to see Route 28 cancelled as it is a low performing route.	1	Route adjustment recommended and will continue to be monitored.

Comments	Number of Comments	Response
<b>Route 32 Windermere</b>		
Like changes on Route 32.	2	Noted.
Positive comments for Sunday service.	2	Noted.
Would like to see frequency improved to 30 minutes on Sundays.	1	Route will continue to be monitored and increased when warranted by service standards.
<b>Route 36 Airport Industrial</b>		
Crowding issue on 7:30am run to get to the 8:00am Fanshawe class at the airport. Introduce another bus. Class size will double over next few years.	1	London Transit to monitor load and assess opportunity for an extra bus if crowding occurs.
Positive comments towards base service for Route 36.	1	Noted.
Request for service to the Airport during full LTC operating hours (evenings).	2	Service to be reexamined later in the five-year plan once ridership patterns on new midday service known.
<b>Route 38 Stoney Creek</b>		
Would like to see service to the YMCA at Sunningdale Road and Adelaide Street. Walking distance too great with no sidewalks.	2	The road is not suitable for bus operations.
<b>Express Service Comments</b>		
Suggestion that the service standards should include a minimum transit time reduction limit for all routes that are called express.	1	Noted.
Positive comments towards proposed Route 92 Express.	3	Noted.
Positive comments towards all improvements on the express routes.	3	Noted.
Would like to see Route 90 Express expanded to Hyde Park (the route would operate from Hyde Park to Masonville Mall, to Downtown and end at White Oaks Mall).	1	Ridership along Fanshawe Park Road does not warrant an Express Route.
Route 90 Express sits at Masonville Mall for 10-15 minutes. Faster to take Route 13.	1	
Suggestion to have Route 93 Express loop around London.	1	Noted.
<b>Other Comments</b>		
Overall the feedback was positive regarding the proposed five-year service plan.		Noted.
Some routing alignments were suggested for various routes in the network.	2	Noted. Detailed service planning will occur each year as part of LTC's annual planning process.

Comments	Number of Comments	Response
Would like to see service on Exeter Road servicing the industrial areas there. Not having transit limits job opportunities.	1	Low density area that is difficult to service by transit and meet minimum productivity targets.
Suggestion to provide service to Komoka/Kilworth, Arva and Dorchester, given their proximity to London.	1	
Request for service to the Fanshawe Conservation Area.	1	