

**1ST REPORT OF THE**  
**RAPID TRANSIT IMPLEMENTATION WORKING GROUP**

Meeting held on November 10, 2016, commencing at 4:33 PM, Committee Room #4, Second Floor, London City Hall.

PRESENT: Councillor P. Squire (Chair), Mayor M. Brown; Councillors B. Armstrong, J. Helmer, J. Morgan, T. Park and H. L. Usher; S. Rooth, D. Sheppard and E. Southern and J. Martin (Secretary).

ABSENT: Councillors A. Hopkins and P. Hubert.

ALSO PRESENT: G. Barrett, A. Dunbar, J. Fleming, J. Ford, M. Gregor, D. MacRae, K. Paleczny, K. Scherr and E. Soldo.

**I. CALL TO ORDER**

1. Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

**II. ORGANIZATIONAL MATTERS**

2. Election of Chair and Vice Chair

That it BE NOTED that the Rapid Transit Implementation Working Group elected Councillor P. Squire as its Chair and S. Rooth as its Vice Chair, for the term ending November 30, 2017.

**III. SCHEDULED ITEMS**

3. London Transit Service Plan Framework 2015 to 2019 and Post 2019

That it BE NOTED that the attached revised communication dated November 2, 2016, from C. Roy, Secretary, London Transit Commission and the attached presentation from K. Paleczny, General Manager, London Transit Commission, with respect to the London Transit Service Plan Framework 2015 to 2019 and Post 2019, were received.

4. Rapid Transit Update

That it BE NOTED that the attached presentation from E. Soldo, Director, Roads and Transportation and B. Hollingsworth, IBI Group, with respect to the Rapid Transit update, was received.

**IV. CONSENT ITEMS**

5. Municipal Council Resolution – Rapid Transit Initiative

That it BE NOTED that the Municipal Council resolution, from its meeting held on June 23, 2016, with respect to the Rapid Transit Initiative, was received.

6. Municipal Council Resolution – London Transit System

That it BE NOTED that the Municipal Council resolution, from its meeting held on September 13, 2016, with respect to the London Transit System, was received.

7. Rapid Transit Implementation Working Group

That it BE NOTED that the staff report dated September 12, 2016, from J. Braam, Managing Director Environmental and Engineering Services and City Engineer, with respect to the Rapid Transit Implementation Working Group, was received.

8. Appointees to the Rapid Transit Implementation Working Group – London Transit Commission

That it BE NOTED that a communication dated September 29, 2016, from C. Roy, Secretary London Transit Commission, with respect to the appointees to the Rapid Transit Implementation Working Group – London Transit Commission, was received.

**V. ITEMS FOR DIRECTION**

9. Rapid Transit Implementation Working Group Meeting Schedule

That the Rapid Transit Implementation Working Group meetings BE HELD in Council Chambers and BE LIVE STREAMED; it being noted that the second Thursday of the month from 4:30 pm to 6:30 pm, was established as the regular meeting date for the Rapid Transit Implementation Working Group; it being further noted that the December meeting will be held Thursday, December 15, 2016 at 4:30 pm.

**VI. DEFERRED MATTERS/ADDITIONAL BUSINESS**

None.

**VII. ADJOURNMENT**

The meeting adjourned at 6:25 PM.



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November 2, 2016

Chair and Members  
Rapid Transit Implementation Working Group

### **London Transit Service Plan Framework 2015-2019 and Post-2019**

The theme of London Transit's 2015-2018 Business Plan is Driving Change. The related vision calls for London Transit to be *"The valued and trusted mobility choice for Londoners"* and the mission statement sets out London Transit's overarching objective to be *"Moving Londoners –progressively, reliably and affordably"*. The vision and mission statements give direction to five congruent and competing strategic outcomes, namely:

- An integrated, affordable and valued mobility choice
- An engaged, diverse and respectful workplace
- Demonstrated fiscal accountability
- Being open, transparent and understood
- Effective utilization of infrastructure

With respect to the strategic outcomes of an integrated, affordable and valued mobility choice and demonstrated fiscal accountability, Dillon Consulting Limited (Dillon) was retained in 2014 to complete a Route Structure and Service Guideline Review of the existing London Transit system. The purpose of the study was 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 recommend improvement to be implemented between 2015 and 2019; and
- Develop a Service Standards document which would 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. Each of the reviews is discussed further below, noting the final document, including the service standards has been approved by the Commission as the framework for service planning going forward.

## Route and Route Structure Review and Resulting Five Year Service Plan

The study leading to the ultimate recommendations included 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 employers, 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 the 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:

- Address overcrowding and missed trips
- Simplify the network
- Continue to build on the express routes
- Address underperforming routes and route segments
- Improve weekend and late evening service
- Provide direct connections between major origins and destination
- Minimize impacts on existing passengers
- Enhance overall service levels with a focus on a frequent transit network and strategic corridors

In light of the strategic objective of demonstrated fiscal accountability, 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 did 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 a potential overall savings of approximately 44,000 annual revenue service hours and 12 peak buses. Direction provided by the London Transit Commission's 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 44,000 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
- Improve off-peak service levels, particularly where service operates at a 60 minute headway or not at all

Route modifications and service level improvements as set out in the plan have been implemented in whole or in part in both 2015 and 2016, noting the plan is intended to be a framework for the beginning of each year's service planning process. In addition to the framework changes set out in the five year plan, assessments are conducted pertaining to:

- Existing service performance issues and demands
- Assessments of previous year's plans as implemented
- New growth areas
- Customer requests

The Commission, at its October 26, 2016 meeting, received the Draft 2017 Service Plan, noting the next steps in the process included further detailed assessments and public review. The final recommended 2017 Service Plan will be presented to the Commission in January 2017.

### Service Standards

The second part of the review provided 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 establish a framework for guiding decisions on how to best serve customers' diverse travel needs within prevailing budgetary and resource limits. The standards 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.

The final Route Review and Service Guidelines document, as approved by the Commission is available on the LTC website.

### **Rapid Transit Integration Study**

In light of the on-going process of fine-tuning the business case associated with London's rapid transit initiative, LTC administration retained Dillon Consulting to assess the overall system structure and provide a high level implementation plan leading to a transit system that incorporates the rapid transit corridors and improves the base service to adequately feed those corridors.

This initiative was undertaken in order to provide the Commission, and ultimately Municipal Council with a solid understanding of the public transit system (including rapid transit) that will ultimately need to be in place in order to meet the expectations/direction as set out in the 2030 Transportation Master Plan. The assessment report includes the final recommended route structure including travel frequencies during peak and non-peak operating hours as well as a high level implementation plan associated with establishing the desired transit network by the year 2027.

Prior to beginning the assessment and implementation plan, a number of parameters were established, including:

- **Connectivity (between regular transit routes and rapid transit routes)**
  - Regular transit routes will touch rapid transit corridors where feasible (opportunity for connection/transfer will be provided)
  - Transit routes will be established in a manner that maximizes destinations at both ends of the route (shopping, commercial, education, etc.)
- **Frequency of service**
  - 5 min peak and 10 min off peak service on rapid transit corridors (per Shift report)
  - 15 min peak and 20 min off peak for routes feeding the rapid transit corridors with the exception of early morning and late evening which should be based on demand

- Consideration given to varying frequency between am and pm peaks given varying demands
- Directness of travel
  - Critical consideration is to be given to route design and frequency to ensure that in cases where riders are required to transfer to a rapid transit corridor to complete their trip, that total trip time will not be increased to something that becomes inefficient, unattractive or unacceptable to the rider. This is defined as being no more than 10% higher than the current travel time (or no more than 5 minutes).
- Duplication of service
  - Regular transit routes which duplicate a large portion of the rapid transit corridor should be considered for elimination or modification unless servicing as a local collector (allowing rapid transit to maintain further stop spacing)
- Operations
  - Modifications made to routes connecting to rapid transit must be able to effectively operate on a clock-face headway and maintain reliable schedules.

The aforementioned parameters are critical, noting the underlying rationale for redefinition of the system including the establishment of the rapid transit corridors is to ensure London's public transit system meets the customer's expectations for efficient, effective, safe and affordable travel when and where they want to go. This will be critical to ensure target mode shares are attained, which in turn takes pressure off the need for road widening to deal with congestion.

There are two types of network design approaches that can be utilized to integrate local services with rapid transit: "through-routing" and "connection-based" networks. For London Transit, the use of a connection-based network outside of the downtown and through-routing network within the downtown area (bounded by Oxford Street to the north, Waterloo Street to the east, York Street to the south and Wharncliffe Road to the west) is recommended. Based on this network philosophy, the following "policies" were applied when assessing potential modifications to the proposed 2019 LTC network to better connect to the proposed Rapid Transit corridors:

1. Within the downtown area, LTC bus routes are permitted to operate on exclusive Rapid Transit lanes, however, they will only be permitted to stop at designated Rapid Transit stations.
2. Outside of the downtown area, LTC buses will (where deemed appropriate) connect to a Rapid Transit station to allow passengers to complete their trip on Rapid Transit.
3. On six-lane roadways that include an exclusive Rapid Transit lane, LTC buses will be permitted in the mixed traffic lane to provide a more local service while rapid transit vehicles would operate in a dedicated right-of-way. This allows greater stop spacing for Rapid Transit and allows better access to transit stops using a local parallel LTC route.
4. On four-lane roadways that include an exclusive Rapid Transit lane outside of the downtown, local LTC buses will be permitted to use short sections of the rapid transit corridors where no other roadway option exists. When this occurs, the assumption is that local LTC buses will not be permitted to stop to pick-up/drop off passengers on the four lane rapid transit corridor, except at a designated Rapid Transit station.

The Rapid Transit Integration Strategy builds on the 2019 service plan identified in the 2015 London Transit Route Structure and Service Guideline Review as well as modifications made in the 2016 Annual Service Plan and identifies:

- Routes that duplicate the Rapid Transit corridors that can be eliminated
- Routes that need to be restructured to fit within the "connection-based" network design concept assumed for Rapid Transit

- Potential strategic corridors that will help increase transit mode share
- Service level enhancements to the recommended 2019 network that will improve connectivity to the Rapid Transit network

Five primary service design principles have been established to guide the overall assessment of LTC routes and their interaction with rapid transit services. These principles are important in that they ensure that the resulting system will be effective and focused on the customer. The five primary service design principles are as follows:

- Ability to maintain connections
- Ability to meet policy-based headways
- Directness of travel
- Minimize duplication with Rapid Transit
- Ability to maintain effective operations

The report sets out detailed descriptions of the changes being recommended and rationale for same. The draft service strategy will require approximately 53,351 additional service hours and require approximately 20 additional buses (exclusive of rapid transit vehicles) over the period of 2019 - 2027.

The service frequencies relating to the base service set out in the Rapid Transit Integration Strategy (the Strategy) are based on the assumption that the BRT corridors will be operating at the frequencies set out in the Rapid Transit Business Case at the time they are implemented. One of the benefits of the Full BRT option is the ability to easily adjust service frequencies based on ridership requirements.

For the purposes of determining LTC base system service changes, each of the LTC routes that will be in place in 2019 was examined against the aforementioned criteria to determine what, if any modifications would be required, and what year they would be required to be implemented. The implementation timing was tied to the key milestones in the rapid transit implementation plan as each of the corridors is expected to be implemented (2020, 2022, 2024 and 2027). The detailed report provides specifics on each LTC route including the anticipated changes and the implementation date. The table below provides a high level summary of the anticipated changes over the period, including the net incremental change to the base system service hours between 2019 and 2027.

	<b>2019</b>	<b>2020</b>	<b>2022</b>	<b>2024</b>	<b>2027</b>	<b>Change</b>
Total Service Hours	654,250	650,865	639,113	687,693	707,601	53,351

As the table indicates, in addition to the 89,729 annual service hours that will be implemented on the rapid transit corridors, a net additional 53,351 annual hours will need to be added to the base system to provide for the levels and frequencies of service required to meet the principles associated with an effective transit system. The route and frequency modifications set out in the Strategy will be utilized as a guideline for the annual service planning process, similar to the manner in which the 5 Year Service Plan is being utilized to guide service planning over the period 2015 through 2019. In cases where ridership levels have not reached the threshold anticipated, frequency recommendations in the Strategy will be modified accordingly.

The modelling in the Strategy with respect to financial implications includes specifics for the two horizon years, 2024 and 2035. The table below sets out the projected transit ridership and financial performance for each of the horizon years, as well as 2015 and 2019 for comparison purposes.

**Projected Transit Ridership and Financial Performance**

	<b>2015</b>	<b>2019</b>	<b>2024</b>	<b>2035</b>
<b>System Performance</b>				
Population	381,300	385,180	416,991	458,698
Annual Revenue Service Hours	581,286	666,332	732,978	791,435
Revenue Passengers	22,369,165	23,738,470	27,450,102	31,581,167
Boardings per Capita	58.7	61.6	61.0	68.8
Boardings per Revenue Service Hour	38.5	35.6	34.7	39.9
<b>Financial Performance</b>				
Annual Transportation Revenue	\$ 32,228,649	\$ 36,543,422	\$ 41,950,513	\$ 60,558,191
Annual Operating Cost	\$ 65,021,934	\$ 78,560,681	\$ 95,077,244	\$ 119,938,893
Total Revenue/Total Operating Cost Ratio	0.50	0.47	0.44	0.50
Net Operating Cost	\$ 32,793,285	\$ 42,037,259	\$ 53,126,731	\$ 59,380,702

The Rapid Transit Integration Study Report, as adopted by the Commission, is available on the LTC website.

Yours truly,



Kelly S. Paleczny  
General Manager

# London Transit Service Plan Framework

2015–2019 and Post 2019

## 2015-2019 Study Objectives

- ▶ Identify what we are doing well and address the quality and performance of existing bus routes and services
- ▶ Understand travel patterns of Londoners and what motivates their travel choices
- ▶ Recommend options that will attract more customers to transit
- ▶ Identify a service plan that improves the customer experience, including consistent arrival times, overcrowding on buses, travel times and connections
- ▶ Develop service and performance guidelines for making decisions regarding changes to services

3

## Study Inputs

- ▶ LTC 2015-2018 Business Plan
- ▶ London Plan
- ▶ Shift (Rapid Transit Strategy)
- ▶ Customer and Stakeholder feedback
- ▶ Employee feedback

## Key Issues Heard

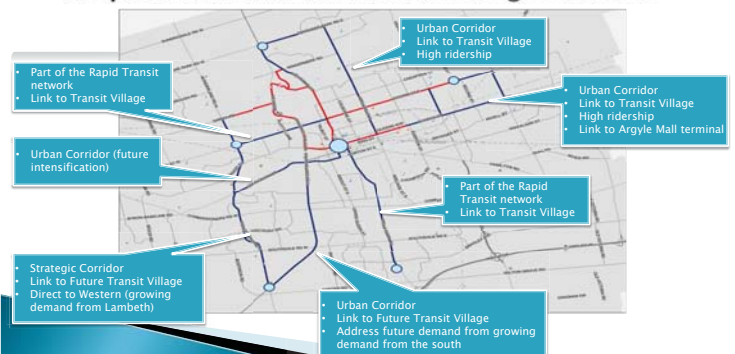
- ▶ Need to grow ridership and meet transit mode share target by:
  - Increasing capacity
  - Better utilizing existing capacity
- ▶ Crowding and schedule adherence on certain routes
- ▶ Long travel times and waiting time while transferring
- ▶ Limited off-peak service (60 minute headways)

## Service Standard Document

An important planning and decision making tool that will be used by London Transit to help:

- ▶ Operationalize the vision and goals of the community
- ▶ Communicate to the Commission and public about the level of transit service that can be expected
- ▶ Provide transparency to the decision making process when addressing requests for new routes/increased service or making decisions to cut services

## Frequent Transit Network and Strategic Corridors





## 5 Year Plan Rollout

- ▶ 5 year plan is considered a framework
- ▶ Annual service plans use the framework as a starting point, also giving consideration to:
  - existing service performance issues and demands
  - assessment of previous service plan changes
  - new growth areas
  - customer requests
- ▶ Draft plans are presented to Commission, followed by public consultation prior to final plan being approved

## Progress to Date

- ▶ 2015 Service Plan
  - addition of approximately 17,500 service hours
  - addition of 5 peak hour buses
  - new express route 92 added
  - increased frequency on a number of routes
  - some route modifications

2015 Service Plan – 12 Month Assessment

Route	Service Change	Boarding/Revenue Service		Ridership	Public Feedback	Assessment of Changes		Status
		Service Standard	2016 Actual			Overall Assessment		
24	Routing	25	17.7	●	●	●		
16	Routing	50	50.6	●	●	●		
12	Routing	25	28.1	●	●	●		
28	Routing	30	12.3	●	●	●		
92	New	30	28.8	●	●	●		
6	Routing	25	58.9	●	●	●		
6A (1100)	PM Peak	220	174.7	●	●	●		Assessed as part of 2017 Draft Service Plan
6A(1100/2C) (1100)	Routing	250/500	274.7/86.7	●	●	●		Assessed as part of 2017 Draft Service Plan
9	Routing	15	26.4	●	●	●		Assessed as part of 2017 Draft Service Plan
18 (1100/33)	Routing	50/200	88.7/73.6	●	●	●		Assessed as part of 2017 Draft Service Plan
18/31/32	Sunday	15/10/10	16.8/36.6/38.9	●	●	●		Assessed as part of 2017 Draft Service Plan
26	Sunday	15	17.4	●	●	●		
26	Routing	25	87.4	●	●	●		
30	Bus	15	18.4	●	●	●		
34	Bus	20	48.4	●	●	●		
34	Routing	20	60	●	●	●		
35	Routing	15	25	●	●	●		
35	Trk	15	12	●	●	●		
35	Trk	20	14	●	●	●		
38/39	Sunday	15/20	18.3/34.3	●	●	●		
81	Peak (Bp/Bump)	30	25.4	●	●	●		
91	Bus	30	57.9	●	●	●		

Legend:	● Meets/Exceeds Standard	● Lower than Standard
Boarding/Revenue	● Positive	● Mixed
Public Feedback	● Positive	● Negative
Assessment	● Positive	● Monitoring
	● Positive	● Under Review

## 2016 Service Plan

- ▶ Addition of approximately 17,500 service hours
- ▶ Extensive changes throughout the system – impacting approximately 54,000 hours of service
  - Improved/reduced frequencies
  - Route realignments
  - New route names and descriptors

## 2016 Service Plan Assessment

- Customer contacts have been received regarding
  - overcrowding on 2 early morning trips on Routes 4 and 26 as well as scheduling issues with Route 2
  - Trippers have been assigned to address this issue
- Requests for schedule change due to gaps in service
  - effective November 27, 2016 to address concerns regarding gaps in service (5 pm to 6 pm) as well as the addition of two early morning trips on Route 2
- Requests for route modification
  - Route 2 is assessed further in the 2017 draft service plan with regard to a route modification to address concerns regarding service to Argyle Mall

## 2017 Draft Service Plan

- The 2017 draft service plan sets out the priority changes to 18 routes accounting for approximately 32,700 hours of service changes including approximately 19,000 new service hours, noting the budget only allows for the addition of 17,700 new service hours in 2017.
- The 2017 service changes focus on 4 main areas for routing modifications
  - North End– Routes 13, 25, 34 and 40 (new route)
  - East End– Routes 2 and 3
  - Route 38
  - Route 12/28
- The remaining service changes relate to frequency improvements and the addition of weekend service on a number of routes.

## Rapid Transit Integration Framework – Post 2019

### Post 2019

- ▶ Intent of the study is to provide a service and route design for the ultimate system including rapid transit focusing on route structure and service frequency
- ▶ Study provides:
  - a phasing plan for incremental improvements, timed to coincide with RT corridor introductions
  - high level financial implications (capital and operating) associated with the improvements

### Purpose of Assignment

- ▶ Identify future LTC network to support proposed Rapid Transit (RT)
  - Route structure
  - Service frequency
- ▶ Outline phasing plan for implementing changes to network
- ▶ Estimate capital and operating costs for this new network
- ▶ Forecast ridership on LTC and RT using first principles
  - Completed at a higher level of detail than the modeling approach used for the Business Case

### Study Output

- ▶ Phasing plan will be used as a framework for the progressive development of the service, noting progress will be impacted by:
  - ridership performance
  - annual service planning process (new developments, customer requests, service performance, etc.)
- ▶ Financial forecasts will be used:
  - in the development of the Commission's Financial Plan and annual operating and capital budgets
  - as input to City of London financial forecasting as it relates to rapid transit

### Route Restructuring: Service Design Principles

1. Ability to Maintain Connections
2. Ability to Meet Policy-Based Headways
3. Directness of Service (Travel Time)
4. Minimize Duplication with RT
5. Ability to Maintain Effective Operations

*\* Changes were made iteratively, through discussions with LTC.  
Policy-based headways were not maintained if there was insufficient demand.*

## Route Restructuring: Eliminations

- ▶ Route 106 (Richmond)
- ▶ Route 104 (Oxford)
- ▶ Route 26 (Jalna Blvd)
- ▶ Route 90 (Wellington Express)

## Route Restructuring: Modifications

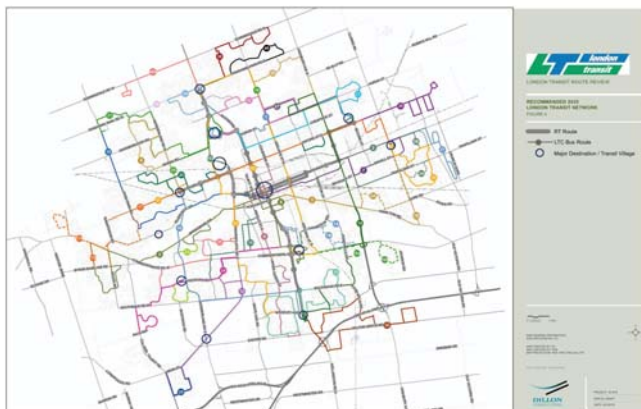
- ▶ Route 1 (Thompson Kipps Lane)
- ▶ Route 2 (Dundas)
- ▶ Route 4 (Oxford East)
- ▶ Route 6 (Richmond)
- ▶ Route 9 (Whitehills)
- ▶ Route 13 (Wellington)
- ▶ Route 20 (Cherryhill)
- ▶ Route 21 (Huron Heights)
- ▶ Route 32 (Windermere)
- ▶ Route 34 (Medway)
- ▶ Route 93 (Wharnccliffe Express)
- ▶ NEW Sunningdale Route

\* Routes with modifications have maintained or improved service frequencies.

## Route Restructuring: Service Changes

- ▶ Route 102 (Dundas)
- ▶ Route 5 (Springbank)
- ▶ Route 10 (Wonderland)
- ▶ Route 14 (Highbury)
- ▶ Route 16 (Adelaide)
- ▶ Route 17 (Oxford West)
- ▶ Route 19 (Oakridge)
- ▶ Route 23 (Berkshire)
- ▶ Route 24 (Base Line)
- ▶ Route 25 (Kilally)
- ▶ Route 27 (Fanshawe College)
- ▶ Route 31 (Orchard Park)
- ▶ Route 33 (Proudfoot)
- ▶ Route 36 (Airport Industrial)
- ▶ Route 38 (Stoney Creek)
- ▶ Route 39 (Fanshawe West)
- ▶ Route 40 (NEW 2019 Route)

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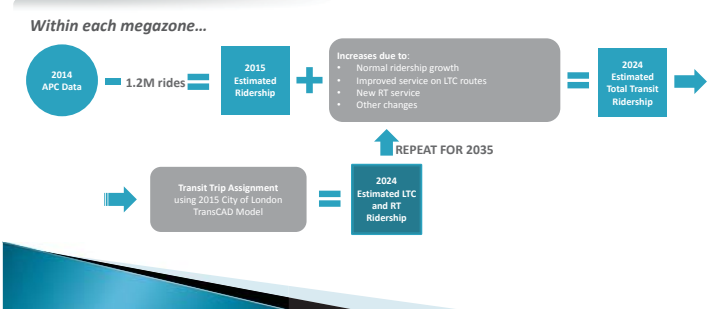


## Questions

## Assessed Network Scenarios

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 downtown; less direct outside of the downtown	More direct travel to destinations outside of the downtown
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 approx. 51% of 2014 service hours	Grid network alone requires approx 70% of 2014 service hours (12 routes)

## Ridership Forecasting: Process



## Ridership Forecasting: Process

- ▶ Megazones created containing several traffic zones each
  - LTC, RT, and Park & Ride
  - Delineated based on land use, transit service
- ▶ Ridership increase estimated in each of these zones



## Our Rapid Transit Initiative

Presentation to the Rapid Transit Working Group  
November 10, 2016



## Outline

1. Progress Update
2. Introduction to Corridor Designs
3. TOD Considerations
4. Station Concepts
5. Vehicle Considerations
6. Business Case Refinement
7. EA/TPAP Process
8. Next Steps



## Progress Update: Current Activities

- Refined May 2016 Rapid Transit Business Case based on feedback from MTO
- Finalizing Rapid Transit Master Plan
- Completing technical work for Pre-Planning for Transit Project Assessment Project
  - Design alternatives and impacts
  - Preliminary engineering design
  - Mitigation measures
- Holding individual stakeholder meetings
- Coordinating with MOECC on Transit Project Assessment Process (TPAP)



## Recent and Upcoming Stakeholder Meetings

- Citi Plaza
- CP Rail
- Downtown BIA
- Fanshawe College
- Old East Village BIA
- Utilities Coordinating Committee (Hydro, Gas, Oil, Telecommunications)
- Western Fair District
- Western University
- Masonville Place Mall
- White Oaks Mall
- Ministry of Transportation



## Corridor Designs: Selected Focus Areas



- Wellington South
  - Complete streets concept
  - Baseline to Horton
- Downtown
  - Station locations and access
  - Clarence Street
  - King Street
  - Forks Area
- Richmond Street tunnel
- Richmond Street North
- Western University
- Old East Village
  - Dundas constraints



## Corridor Designs: Wellington South

### Preliminary Preferred Complete Street Concept

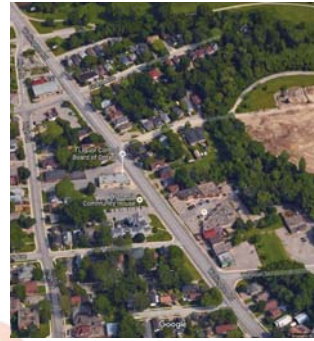


## Corridor Designs: Wellington South



Illustrative Complete Street Concept

## Corridor Designs: Wellington South



- Widening Wellington Road between Baseline and Thames River will require property purchase
- Will evaluate impacts and design alternatives which seek to balance rapid transit objectives with property impacts
- Will include review of access management and new signal locations

## Preferred Downtown Routing



## Corridor Designs: Clarence Street

- Clarence Street is the preferred connection from King Street to Richmond Street and tunnel portal
- Preliminary design concept would reduce traffic to (typically) one lane while providing two dedicated lanes for rapid transit
- Designs will strive to maintain local access



## Corridor Designs: King Street

- Existing right-of-way on King Street between Talbot Street and Waterloo Street will be maintained and space will be reallocated to allow for two transit only lanes
- Design options to ensure access to Market and other uses are being developed



## Corridor Designs – Forks Area

- Convert Queens Ave two-way traffic west of Ridout Street
- Re-direct general purpose traffic on Kensington Bridge to Queens Ave
- Make Kensington Bridge transit only
- Explore design options to accommodate cyclists on Queens Avenue and/or Kensington Bridge and refine platform locations



## Richmond Street Tunnel

- Grade separation of Richmond Street with CP Rail is key component of rapid transit initiative
- Extends from Central Avenue to St. James Street



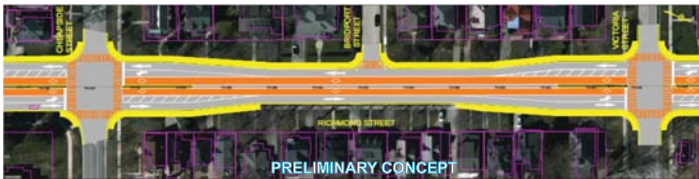
## Richmond Street Tunnel

- Benefits/Opportunities
  - Improved transit service reliability
  - Maintains traffic capacity on Richmond Street
  - Local LTC and Emergency Services permitted to use tunnel
- Implications include:
  - Major sanitary and storm sewer relocations
  - Ventilation shaft and fire-life-safety provisions
  - Mitigation of business impacts during construction



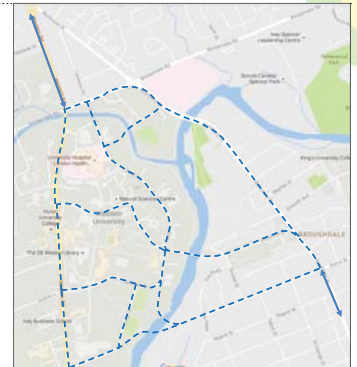
## Corridor Design Concepts – Richmond Street North

- Tunnel will be under Richmond Street from Central Ave until it emerges at St. James Street.
- Between St. James Street and Grosvenor Street, the existing right-of-way will be expanded to add two transit only lanes.
- Between Grosvenor Street and University Ave, it is proposed that two traffic lanes will be repurposed as transit only lanes, maintaining the existing ROW.



## Western University

- Several routing alternatives through and near campus were considered during the initial phase of the RT Master Plan
- Many were removed from consideration due to high cost and high impact on the environment (heritage, natural, social)
- Informed by meetings with Western University



## Western University – Potential routings

- Option 1 – Middlesex Drive:** Direct rapid transit service to the centre of Campus and University Hospital using University Drive and Middlesex Drive.
- Option 2 – Lambton Drive:** Direct rapid transit access to the south-central part of campus using University Drive, Lambton Drive, and Western Road.
- Option 3 – Windermere Road:** Does not enter the campus, but circumvents it via Richmond Road and Windermere Road.

Western University currently undertaking master plan study which will inform selection of preferred alignment and design

- Reducing impacts of vehicular traffic on campus is a key objective for University
- Initial recommendations expected late 2016

## Corridor Design Concepts – East Corridor

Dundas Street/King Street between Waterloo St. and Ontario St.

- Dundas St. is proposed to be maintained and one lane of parking will be repurposed as a transit only lane
- King Street is proposed to be maintained and one westbound lane repurposed as a transit only lane
- Heritage buildings at Dundas and Ontario Street present significant design challenges and may require other alignments to be considered including a King Street only option

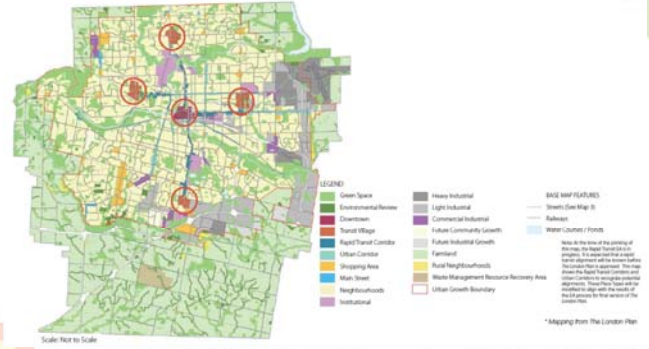


## Transit Oriented Development

- The London Plan places a strong emphasis on Transit Oriented Development, which is facilitated by Rapid Transit
- Design alternatives seek to maximize opportunities for TOD



## TOD Areas

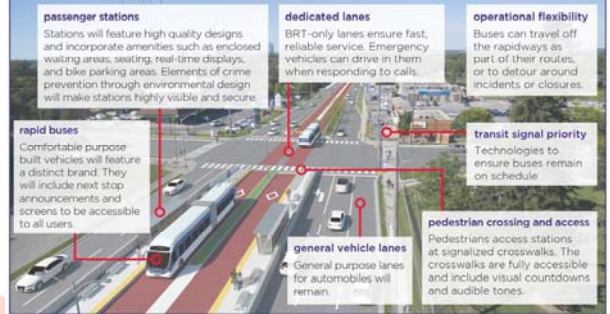


## TOD Sample Focus Area: Oxford and Highbury

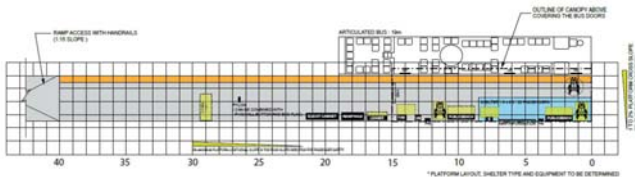


## Typical Rapid Transit Station

Wellington St. looking north at Base Line Rd. (conceptual)



## Typical Station Layout



## Station Precedents: Zum, Brampton



## Station Precedents: Swift BRT, Seattle



## Station Precedents: HealthLine, Cleveland



## Vehicle Options

### Electric Bus Overview

- Options include traditional battery powered or induction charging
- Battery technology is improving and making electric buses feasible for Canada; requires overnight charging
- Induction charging allows buses to charge quickly while in service (approx. 10 minutes to fully charge after 40 km of driving)
- Higher cost of initial investment would be off-set by energy savings over time



## Electric Buses for London?



**400 km**

Depending on the model, electric buses can travel for up to 400 km on a single charge



**\$170 K**

The additional average annual cost over the project lifecycle (accounts for additional capital cost, increased running times for charging, and fuel savings)



**12 Years**

The typical lifecycle of an electric bus is 12 years – similar to that of a standard bus



**0**

The amount of local emissions that are produced by the buses

## Vehicle Options

### Proterra Electric Bus



## Winnipeg – New Flyer



## Business Case Refinements

- The draft business case was reviewed by MTO over the summer/fall
- The approach to transit business case development is an evolving practice
- MTO provided two sets of comments that reflect their current practice and approach to business cases that are considered for provincial funding. The comments have been addressed and will be incorporated in an updated business case

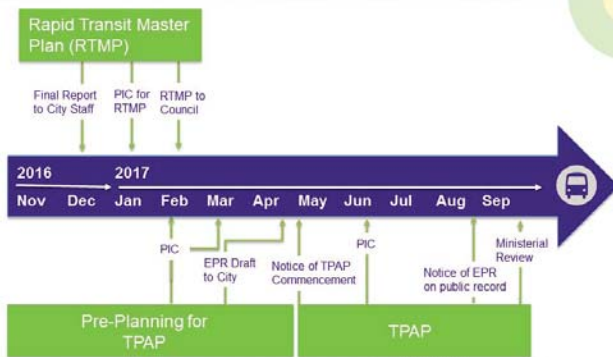


## Business Case Refinements

- Key changes include:
  - Increased contingencies (up to 50% from 40%)
  - Increased discount rate
  - Updated method for calculating future benefits
  - Updated spare-vehicle ratio
  - Increased cost for buses
  - Reduced assumed value of time (input to value of transit savings)
  - Updated multiplier for safety and auto operating benefits
- Combined effect is a lower benefit cost ratio (BCR) but relative differences between alternatives remains the same – Full BRT has highest BCR

	Base BRT	Full BRT	Hybrid	Full LRT
Previous BCR	1.30	1.60	1.10	0.80
Updated BCR	0.92	1.18	0.80	0.65

## EA/TPAP Process



## Next Steps

- Continue to evaluate design alternatives and evaluation of impacts
- Continue to meet with stakeholders
- Utilize Rapid Transit Working Group as sounding board