

TO:	CHAIR AND MEMBERS RAPID TRANSIT IMPLEMENTATION WORKING GROUP MEETING ON JUNE 30, 2020
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR ENVIRONMENTAL & ENGINEERING SERVICES AND CITY ENGINEER
SUBJECT:	WEST CORRIDOR TRANSIT OPTIONS REVIEW

RECOMMENDATION

That on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to the review of higher order transit service and/or transit improvement projects to West London;

- (a) the following options **BE ENDORSED** for further consideration under the Public Transit Infrastructure Stream of the Investing in Canada Infrastructure Program;
- i) Segment 1 – Wharncliffe Road from Riverside Drive to Oxford Street West and Oxford Street West from Wharncliffe Road to Platt’s Lane - maintain four general traffic lanes on Wharncliffe Road, buses in mixed traffic, plus a westbound dedicated lane on Oxford Street West (Original Design);
 - ii) Segment 2 – Oxford Street West from Platt’s Lane to Wonderland Road - Widen to six lanes: maintain four general traffic lanes and widen to add two centre-running transit-only lanes (Original Design);
 - iii) Segment 3 – Oxford Street West from Wonderland Road to Hyde Park Road - intersection improvements, adding or extending right-turn lanes to operate as queue jump lanes for buses;
 - iv) Segment 4 – Oxford Street West from Hyde Park Road to Westdel Bourne – future extension of rapid transit service in mixed traffic with smart traffic signals, with no change to road infrastructure;

PREVIOUS REPORTS PERTINENT TO THIS MATTER
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- Civic Works Committee – June 19, 2012 – London 2030 Transportation Master Plan;
- Civic Works Committee – October 7, 2013 – Bus Rapid Transit Strategy;
- Civic Works Committee – July 21, 2014 – Rapid Transit Corridors Environmental Assessment Study Appointment of Consulting Engineer;
- Civic Works Committee – June 2, 2015 – Rapid Transit Funding Opportunities;
- Civic Works Committee – August 24, 2015 – Shift Rapid Transit Initiative Appointment of Survey Consultants;
- Strategic Priorities and Policy Committee – November 9, 2015 – Shift Rapid Transit Update;
- Strategic Priorities and Policy Committee – January 28, 2016 – Downtown Infrastructure Planning and Coordination;
- Strategic Priorities and Policy Committee – May 5, 2016 – Shift Rapid Transit Business Case;

- Strategic Priorities and Policy Committee – September 12, 2016 – Rapid Transit Implementation Working Group;
- Strategic Priorities and Policy Committee – May 3, 2017 – Rapid Transit Alternative Corridor Review;
- Strategic Priorities and Policy Committee – May 15, 2017 – Rapid Transit Corridors;
- Civic Works Committee – July 17, 2017 - Shift Rapid Transit Additional Engineering and Legal Survey;
- Strategic Priorities and Policy Committee – July 24, 2017 – Rapid Transit Master Plan and Business Case;
- Strategic Priorities and Policy Committee – September 18, 2017 – Project Management Plan, Communications Plan and Consulting Fees Amendment;
- Strategic Priorities and Policy Committee – April 23, 2018 – Bus Rapid Transit Environmental Assessment Initiative;
- Civic Works Committee – March 14, 2018 – The History of Rapid Transit;
- Strategic Priorities and Policy Committee – March 25, 2018 – Investing in Canada Infrastructure Program - Public Transit Stream Transportation Projects for Submission;
- Strategic Priorities and Policy Committee – March 25, 2019 – Investing in Canada Infrastructure Program, Public Transit Stream, Transportation Projects for Submission; and
- Strategic Priorities and Policy Committee – October 28, 2019 – Investing in Canada Infrastructure Program, Public Transit Infrastructure Stream, Approved Projects.

2019-2023 STRATEGIC PLAN

The following report supports the Strategic Plan through the strategic focus area of “Building a Sustainable City” by implementing and enhancing safe and convenient mobility choices for transit riders, automobile users, pedestrians, and cyclists.

BACKGROUND

Context

On March 26, 2019, Council selected ten transportation projects to be submitted for approval under the Public Transit Infrastructure Stream (PTIS) of the Investing in Canada Infrastructure Program (ICIP) from a list of eligible projects capable of being constructed within the funding window.

On June 25, 2019, the Province pledged \$103.2 million for all ten of the transit and transit-supportive projects under the ICIP program, and on August 23, 2019, the Federal government announced \$123.8 million for the same projects.

The current approved ICIP projects were part of the first round of funding. A second round of ICIP funding is anticipated. The ten approved ICIP projects did not utilize the full funding allocation, leaving an available balance to support future applications for transit-supportive works. A further breakdown of available ICIP funding is provided later in this report.

The rapid transit (RT) plan was presented for ICIP consideration in 2019 as five component projects able to stand alone or work in combination with other projects on the

list. Council prioritized three of the RT projects for the initial ICIP funding application: the Downtown Loop, the East London Link and the Wellington Gateway. The West and North corridor RT projects were not prioritized at the time, providing opportunity for further discussion of transportation needs for those parts of the city.

Purpose

On November 26, 2019, Council directed staff to explore further options for improving transit service to West London through the following resolution:

That the Civic Administration BE REQUESTED to review and report back with recommendations for providing higher order transit service and/or transit improvement projects to West London, including but not limited to potential modifications of the West Connection project that address:

- a) *options for higher order transit serving West London, including the extension of service further west;*
- b) *local service integration opportunities;*
- c) *additional road design alternatives along the corridor, including a review of lane configurations and options for phased delivery;*
- d) *the possibility of a quick-start program that includes prioritized intersections with mixed traffic routes,*
- e) *opportunities for park and ride;*
- f) *the possible need for electric bus infrastructure; and*
- g) *the Civic Administration BE DIRECTED to consult with the London Transit Commission on the matters identified in part a), above.*

The approved Environmental Assessment for London’s rapid transit initiative provides the foundation to continue exploring options for measures to improve transit service to West London. Staff was able to review transit options for the West under the current consulting contract for the Environmental Assessment and representatives of the London Transit Commission continued their participation on the project team.

This report summarizes the development and assessment of options to optimize transit service to West London addressing parts a), c) and d) of the resolution. This report also provides supporting background information and commentary in response to parts b), e) and f) of the resolution.

DISCUSSION

Overview of West Corridor Review

Status of the Environmental Assessment

The Rapid Transit Initiative Environmental Assessment followed the Transit Project Assessment Process (TPAP) – a provincially regulated protocol created to support transit initiatives (O.Reg. 231/08). On June 4, 2019, the City of London received a “Notice to Proceed with Transit Project” from Ontario’s Minister of Environment, Conservation and Parks. This process allows the City to proceed with any or all components of the Bus Rapid Transit project in accordance with the Environmental Project Report (EPR).

The engineering work, technical studies and consultation that went into the EPR provide the foundation to review alternatives to the approved design concept. The West Corridor Review (Appendix A) provides a Master Plan-level evaluation of a range measures that

would improve transit, including elements of the Original Design proposed in the EPR, for comparison purposes.

Any options that increase the footprint of the Original Design, or extend beyond the previous study limits, may require additional Environmental Assessment and public consultation, culminating in an addendum to the EPR. Additional analysis and data gathering may include but not be limited to: traffic and transit operations, natural environment, cultural heritage, archaeology, stormwater and utilities. The length of time required to complete the additional analysis would vary depending on the study area and range of options. At a minimum, it is anticipated that any further study would take at least one year to complete.

Environmental Assessment implications were included as an evaluation criterion in the corridor review.

West Transit Corridor Route

The Rapid Transit Master Plan (2017) identified various potential corridors within the city for higher order transit, considering land use density; growth in people and jobs; major destinations; and existing transit ridership. Detailed corridor and network assessments analyzed criteria related to transportation capacity and mobility; the ease of implementation and operational viability; opportunities for community building and revitalization, and impacts to the natural environment and climate change. Exhibit 1 illustrates the long list of corridor segments considered at the master planning stage.



Exhibit 1: Rapid Transit Master Plan Exhibit 3.5 Long List of Corridor Segments

A long list of potential corridors was developed for the West end of the city, including Oxford Street West, Springbank Drive, Wharncliffe Road and Wonderland Road. Each of the corridors was screened and ranked on their ability to support rapid transit.

Oxford Street West was ultimately chosen for the West Transit corridor based on its ability to:

- serve trip generating destinations;
- support higher levels of employment and/or population growth;
- connect to an area of high residential density around Wonderland Road;
- serve moderate to high levels of existing transit ridership;
- align with the Transportation Master Plan and previous LTC Rapid Transit studies;
- and,
- make rapid transit a more competitive transportation alternative to support and grow transit ridership.

The Original Design proposed in the EPR for the West Leg, starts at the intersection of Ridout Street and Queens Avenue, and continues west along Riverside Drive, north along Wharncliffe Road North, and west along Oxford Street West with a turnaround just west of Wonderland Road North at Capulet Walk.

The West Corridor Review, detailed in Appendix A, considered the Oxford Street West route recommended in the Rapid Transit Master Plan, and carried forward into the EPR, but also considered extensions further west. The West Corridor was separated into four segments reflecting the varied land use, traffic, and cultural environment conditions along the corridor. Segments 1 and 2, as shown in Exhibit 2, represent the Original Design proposed in the EPR. For the purpose of this analysis, review of the corridor was extended west along Oxford Street West to Westdel Bourne, shown as Segments 3 and 4 in Exhibit 2. Options to improve transit were developed and assessed for each of the four segments.

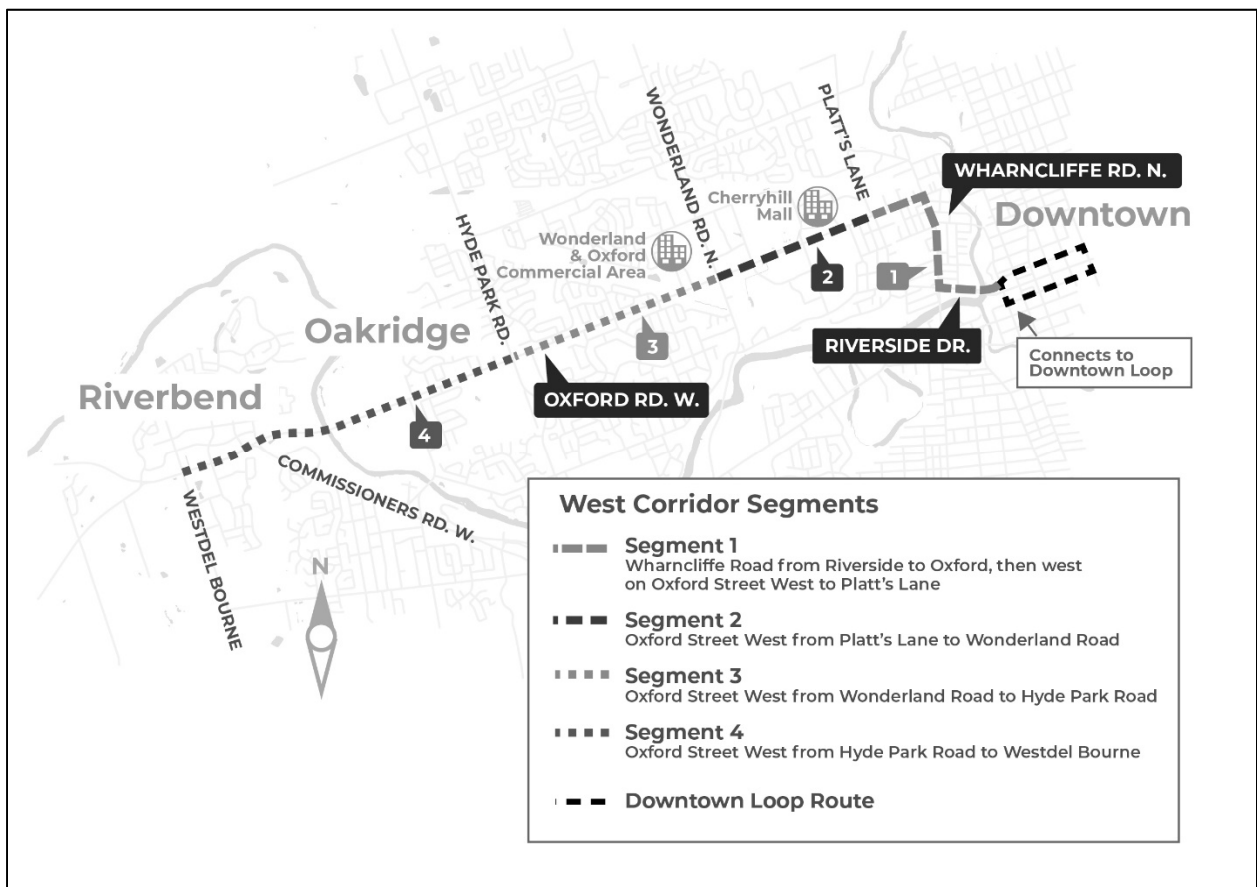


Exhibit 2: West Corridor Review Map

Interactions with North Corridor Review

On January 14, 2020, Council passed a second resolution directing staff to explore further options for improving transit service in the North end of the city.

The North Corridor Review is detailed in a companion SPPC report and considers transit options along both Richmond Street and Western Road/Wharncliffe Road. Under some North options, Segment 1 of the West Corridor Review (Wharncliffe Road south of Oxford Street West) would need to accommodate the transit demand of both the West and North RT routes. As a result, this section of Wharncliffe Road would have the highest frequency of buses of the City's RT network outside of the downtown core. Wharncliffe Road would need to accommodate the peak-hour 10-minute frequency of RT for the West Corridor plus the 5-minute frequency of RT for the North Corridor, plus some local transit routes and general traffic.

The West Corridor Review assesses options for Segment 1 independent of transit options for the North. The North Corridor Review considers the influence on Wharnccliffe Road south of Oxford Street West (Segment 1) when evaluating options to improve transit.

Supporting Documentation

The West and North Corridor Reviews are presented in separate concurrent reports to be considered in tandem.

Staff were able to complete both corridor reviews using remaining budget under the existing Environmental Assessment contract. The project team was able to build on baseline information, studies, modelling and past analysis from the Rapid Transit Master Plan and EPR.

Attached in Appendix A is the West Corridor Review technical memorandum and detailed evaluation tables. This work was supported by traffic analysis of conceptual roadway configurations, high-level concept drawings and qualitative assessment of measures to improve transit. In the case of Segments 3 and 4, which extend service west beyond the limits of the EPR analysis, traffic volumes were forecasted to 2034 using the City-wide transportation model outputs and recent traffic impact studies completed for development applications.


Order-of-magnitude capital cost estimates were prepared for all alternatives, based on per-metre cost estimates for each typical roadway configuration, derived from the London RT network cost estimate prepared with the EPR. These costs include infrastructure costs and associated contingencies, utility relocation costs, allowance for property acquisition, and additional bus fleet requirement costs. The estimates also include engineering and project management costs and applied contingency consistent with the master planning level of detail available.

The cost estimates have been inflated to reflect nominal dollars and broken down into their ICIP-funded and municipally funded shares, reflecting any ineligible costs.

Developing Options to Improve Transit

The Project Team considered a full range of measures to improve transit when developing options for evaluation. However, some options were considered operationally infeasible or not applicable under ICIP, and therefore were not carried forward for evaluation.

Table 1: Options Developed for Various Sections of Corridor*

Minor Transit Improvements/ Lowest Cost  Major Transit Improvements/ Highest Cost	<ul style="list-style-type: none"> • Express bus service • Transit signal priority – RT operating in mixed traffic • Intersection improvements (queue jump lanes) • Convert existing lane to two-way transit-only lane • Convert existing lanes to transit-only lanes • Widen to add a two-way transit-only lane • Widen to add transit-only lanes
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* Only bolded options carried forward for evaluation

Table 1 summarizes transit improvement measures considered as part of this review and highlights those short-listed for evaluation. The following sections provide a brief explanation of each transit option considered and detailed evaluation tables are included in Appendix A.

Express Service

Express bus service is intended to reduce travel times over conventional local service by making fewer stops and following more direct routes. LTC already operates Route 91 on Oxford Street from Fanshawe College to Capulet Lane with plans to extend service easterly to Argyle Mall. Extending express bus service westerly is already considered through LTC's annual service reviews and does not require infrastructure investment under ICIP. This option was not carried forward for evaluation.

Enhanced Transit Service with Transit Signal Priority (TSP)

The Transportation Intelligent Mobility Management System (TIMMS) project, currently funded as one of the 10 approved ICIP projects, includes transit signal priority and other traffic signal improvements – such as sensors and video cameras – along major corridors. The project will reduce intersection delays and smooth traffic flow for both transit and drivers. This option assumes buses would operate in mixed traffic with intelligent traffic signals to help improve transit travel times, but does not include any changes to road infrastructure. In order for transit service beyond Capulet Lane to operate every 10 minutes, as identified in the EPR for the West Leg, additional buses would be required.

Intersection improvements

This option would add or extend right-turn lanes at signalized intersections that buses can use as queue jump lanes, while maintaining four lanes of general traffic. Queue jump lanes improve transit travel times by allowing buses to by-pass traffic and get to the front of the queue at signals. Transit signal priority would provide a head start for transit with an advance green transit-only signal phase. Intersections were assessed to determine the lane length needed for a bus to by-pass through traffic queues 50 per cent of the time or 95 per cent of the time during peak hours.

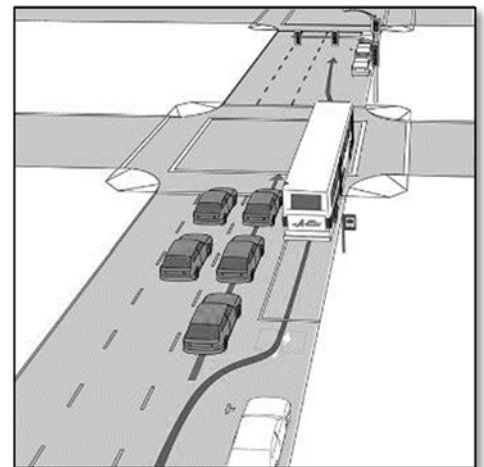


Diagram of queue jump lane.

While intersection improvements would benefit transit operations at intersections, buses would still be operating in mixed traffic for the majority of the route and experience delays associated with congestion and right-turning movements. Providing priority for transit at intersections may also increase delay for drivers due to adjusted signal timing.

Queue jump lanes are not the same as bus bays, which require drivers to yield the right-of-way to buses when the bus indicates an intention to re-enter the adjacent traffic lane. Ontario has Yield to Bus legislation, however, compliance is a concern, particularly on high-volume roads. Bus bays only are useful in specific circumstances (i.e. stops with higher passenger loads and ridership needing mobility aids or stops with schedule layovers requiring the bus to sit longer). Increased use of bus bays would have a negative impact on transit schedule adherence and therefore was not considered as part of this review.

Two-way transit-only lane options

A two-way transit lane consists of a single transit-only lane in the centre of the road. Buses travelling in both directions alternate use of the lane, controlled by signals at either end of the shared lane.

Options for two-way transit-only lanes were considered initially, but not included as part of the evaluation. Two-way transit-only lanes require complex signal operations, which result in transit delays and are only feasible for short segments framed by signalized intersections. Plus, the design requirements for safe operation and maintenance result in widening impacts and costs nearly equivalent to two single-direction transit-only lanes.



Two-way transit lane in Eugene, Oregon.

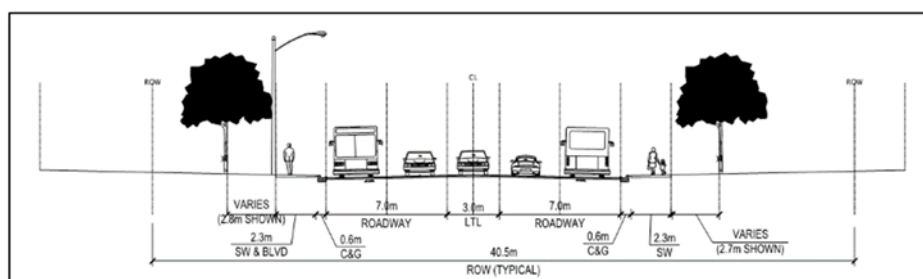
Curbside transit-only lanes

Transit-only lanes run along the outside curb and allow buses to pick up passengers at RT stops located along the roadside. Local service would also use the curbside transit-only lanes, but would only stop at RT stops to avoid slowing down RT buses.

For safety reasons, curbside transit-only lanes on busy arterials, such as Oxford Street West, would require a raised centre median to restrict left-turn movements to signalized intersections. U-turns would be permitted at signalized intersections, but completing a U-turn from the lanes adjacent to the centre median would be tight and challenging. Buses in the curb lane would receive transit priority, potentially increasing delay for drivers due to adjusted signal timing. Curbside transit-only lanes is less ideal than a

Example of curb-side RT.

centre-running design from both a traffic safety and transit reliability perspective, as motorists must cross the transit-only lanes for any right-turning movements.



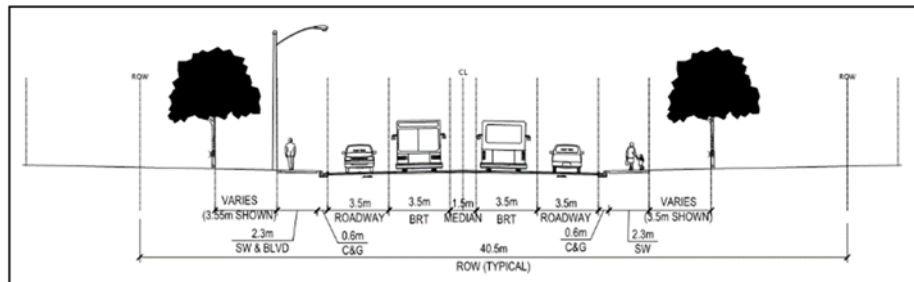
Centre-running transit-only lanes

Transit-only lanes run down the centre of the road with a raised centre median. RT stops are located on sheltered platforms in the centre of the road, while local service continues to run in the curb lane. RT passengers access the protected centre platform by crossing the road at a signalized cross-walk.

The raised centre median restricts unsignalized side streets and mid-block driveways to right-in/right-out access. Without the raised centre median, motorists would inevitably try to turn left from the centre-running transit-only lanes, resulting in stopped vehicles blocking RT buses and decreasing the reliability of the RT service. Left-turn movements are consolidated at signalized intersections to provide protected, safe turns across on-coming traffic. The centre-running transit-only lanes would increase the radius for

drivers completing U-turns, which would make the movement easier for drivers to manoeuvre.

Centre-running transit-only lanes provide the purest form of RT in terms of their ability to support service frequency and reliability. Centre-running RT is also the most efficient configuration for winter maintenance.



Example of centre-running RT.

Evaluating Options to Improve Transit

The options for each of the four segments were evaluated against the following 12 (Table 2).

These criteria support the evaluation and comparison of options. They are not intended to carry equal weight, but to provide insight into how different options balance transit benefit against physical impacts, operational impacts, study implications and cost.

Detailed evaluation tables are provided in Appendix A.

Table 2: Evaluation Criteria

Benefit to transit operations	Transit operations, including reliability and travel time delay, considered, with input from LTC.
Increase in ridership	Ability to grow transit ridership by attracting new or choice riders based on implementing enhancements.
Benefit to traffic operations	Traffic operations assessed with modelling, including signalized intersection operations, queue lengths, and potential for traffic diversion, with consideration for pedestrians and cyclists.
Least property impacts	Impacts to buildings and properties assessed for each option, indicating potential full and partial property impacts.
Least cultural heritage impacts	For options that would result in some form of property impact to a property with potential cultural heritage value or interest, a Cultural Heritage Evaluation Report would be required with timing and cost implications.
Least impact on trees	A high-level assessment of the number of trees impacted. This did not include a Tree Inventory to assess the health, size or type of trees.
Least impact on utilities	A high-level assessment of above-ground utilities, based on previously collected utility information.
Least impact on driveways	A high-level assessment of the number of driveways and potential parking impacts.
Redevelopment potential	For options that include widening, considered ability to encourage redevelopment and potential opportunities to merge residual parcels.
Most consistent with City's policy objectives	Assessed whether options support the goals and objectives of the London Plan.
Least EA Implications	Identified whether options would trigger the need for an addendum to the approved EA and the related study, consultation and timing implications.
Capital cost	High-level cost estimates developed using costs for similar roadway configurations to provide a range of potential capital costs.

Other Transit-related Discussion Items

The following sections provide background information and commentary on additional topics related to the future delivery of transit service as noted in the November 26, 2019 Council Resolution.

Local Service Integration

In September 2018, LTC presented its Rapid Transit Integration Strategy. The report included a forecast of the 2035 LTC bus network and provided strategic direction for how local service should integrate with rapid transit. Given the extended nature of the forecast, it is expected that the annual service plan review process will provide further in-depth analysis in order to respond to growing and shifting ridership.

In the event rapid transit service is extended even further west, the annual service plan process would identify any modifications to the local route network required to better integrate with the RT network. This review would be completed in advance of rapid transit service coming online to reflect ridership demand at that time.

As noted above, local service modifications including express bus service options were not carried forward in this corridor review evaluation. These options do not require infrastructure investment or funding under ICIP and are already considered through LTC annual service reviews.

Electrification Considerations

The background research for the Rapid Transit Master Plan (2017) and the Environmental Project Report (2019) considered the possibility for electric bus infrastructure. The Canadian Urban Transit Research and Innovation Consortium (CUTRIC) conducted economic modelling for different charging methods (fast charging versus slow charging), and the financial comparisons to diesel alternatives.

This information was presented at the SPPC meeting on September 17, 2018. The assessment demonstrated that:

- full electrification of the bus rapid transit system proposed in the original EPR was feasible;
- there are larger up-front costs for electrified vehicles (new infrastructure, specialized training, upgrades to electrical grid to support charging requirements, backup power solutions, etc.);
- there are long-term savings operationally; electricity is cheaper than diesel;
- advancements in technology will make electric vehicles more efficient; and
- there are environmental benefits with electrified vehicles which are three to five times cleaner than an equivalent diesel vehicle (when comparing carbon dioxide emissions).

Some considerations for electrified transit include:

- Bus configuration (length and size of battery)
- Range of operation (length of route and number of trips bus can make before batteries are empty)
- Charging options – trickle charge (slow rate of charge over a long time) or rapid charging (high rate of charge over a short time)
- Charging infrastructure – multiple rapid charges at the end points of routes or slow chargers at the depot
- Grid capacity

On November 27, 2019, the London Transit Commission directed LTC staff to report back on the steps involved with studying the impacts associated with electrification of the LTC bus fleet.

In response, LTC staff outlined an action plan to study fleet electrification beginning with an operational analysis, followed by an investigation of market analysis; energy and charging requirements; facility needs; utility interconnections and on-site power; and financial analysis and procurement strategy. At its meeting on January 29, 2020, the Commission approved the staff recommendation to award a contract to CUTRIC to undertake a Feasibility Analysis and Simulation-Based Planning Study.

Park and Ride Considerations

Park and Ride facilities provide an opportunity for drivers to transfer to transit. They are typically located at key locations such as major junctions within the transportation network and have strategic value. The goal is to encourage commuters from suburban and out-of-town locations with lower densities and higher levels of car use to connect to transit for the portion of their trip that is within the City.

Examples of ways other municipalities have established Park and Rides include:

- Sharing use with municipal parking lots/garages;
- Utilizing existing parking spaces at commercial locations;
- Exploring opportunities through Site Plan development applications;
- Sharing spaces within commercial parking lots;
- Exploring joint development opportunities; or
- Utilizing vacant land owned by municipalities.

The City of London and the London Transit Commission introduced a Park and Ride Monthly pass program for the downtown core in 2008. The program allows pass-holders to park at one of two municipal parking lots (Lot 1 & Lot 2) located in Old East Village (north of Dundas Street between Adelaide Street and English Street) and travel downtown via London Transit bus routes 2 Dundas, 7 Wavell and 20 Cherryhill. The service is available anytime Monday through Sunday, at a monthly rate of \$60.

The EPR did not propose a Park and Ride facility on the west corridor, which ended at Oxford Street West and Capulet Lane in the Original Design.

However, if extending transit service further west to Hyde Park Road, there may be opportunities to explore Park and Ride options, including working with business and land owners in the Oxford/Hyde Park commercial area. All four corners of the intersection have commercial properties with some parking adjacent to Oxford Street West. There could be future opportunities to establish spaces through development applications should any these sites redevelop.

If extending transit service even further west to Westdel Bourne, ongoing and planned development activity may provide opportunities for coordination through site plan applications on undeveloped blocks or sharing of already planned parking spaces.

Opportunities for Park and Rides in the west will be driven by a combination of demand and opportunity. As ridership continues to grow in the west, both the City of London and LTC will continue to monitor potential to integrate Park and Ride options with transit service.

RECOMMENDED OPTIONS

The following section highlights some of the key considerations supporting the recommended options for each of the four segments of the West Corridor. For more detailed information, Appendix A provides technical commentary on the options for each segment, including comprehensive evaluation tables with commentary for each of the criteria noted in Table 2.

SEGMENT 1: Wharnclyffe Road North and Oxford Street West from Riverside Drive to Platt's Lane

Recommended Option: Option 1. Buses would operate in mixed traffic, maintaining four general traffic lanes on Wharnclyffe Road, with intersection improvements at Riverside Drive and Oxford Street West. Additionally, a centre westbound transit-only lane would be provided on Oxford Street West from Wharnclyffe Road North to Platt's Lane.

This option would maintain existing traffic capacity along Wharnclyffe Road with buses operating in mixed traffic. Transit signal priority and queue jump lanes would be provided at the signalized intersections of Riverside Drive and Oxford Street West. Implementation would be coordinated with the separate ICIP approved Oxford/Wharnclyffe intersection improvements and would also improve east-west local-route transit operations.

This segment is located within the Blackfriars-Petersville Heritage Conservation District and the existing flood plain of the Thames River. This option proposes no mid-block widening of Wharnclyffe Road, which would minimize the impacts to cultural heritage resources, existing buildings, property, trees and utilities, as well as minimizing the increase to impermeable surface in the area.

This option is consistent with the Original Design proposed in the EPR, meaning there would be no further Environmental Assessment implications.

As noted above, the Wharnclyffe Road portion of Segment 1 is also being considered as part of the North Corridor review and some options for the North Corridor would influence this recommended option. If RT for both the West and North Routes were to run along this segment of Wharnclyffe Road, it could drive higher order transit options.

This review of the West Corridor assesses options for Segment 1 independent of transit options for the North Corridor.

Capital Cost Estimate

Option 1 is recommended for Segment 1 of the West Corridor when considered independent from the North Corridor.

Option 1 - Maintain 4 general traffic lanes, buses in mixed traffic, intersection improvements

The Option 1 estimated total project cost ranges from \$37.3M to \$41.9M.

The preferred approach for the North Corridor could drive higher order transit for West Segment 1. For reference, the estimated cost ranges for Options 2 and 3 are also provided.

Option 2 - Maintain two general traffic lanes (one lane in each direction), and convert 2 of the general traffic lanes to transit-only lanes.

The Option 2 estimated total project cost ranges from \$54.6M to \$62.6M.

Option 3 - Maintain 4 general traffic lanes (two in each direction), and widen corridor to add 2 dedicated centre-running transit-only lanes

The Option 3 estimated total project cost ranges from \$66.6M to \$76.5M.

SEGMENT TWO: Oxford Street West from Platt's Lane to Wonderland Road North

Recommended Option: Option 1. This option includes widening Oxford Street West to six lanes. The existing four general traffic lanes would be maintained, with the addition of two centre-running transit-only lanes. This option is consistent with the Original Design proposed in the EPR.

Option 1 would provide the greatest improvement to transit operations. Providing transit-only lanes would separate buses from general traffic and congestion, improving transit reliability. Furthermore, centre-running transit-only lanes do not experience delays from the turning movements of other vehicles. In addition, maintaining four general traffic lanes on Oxford Street West would provide capacity to support forecasted traffic volumes to 2034.

Widening the corridor to accommodate the dedicated transit lanes would have some impacts to properties, trees and driveways. Utilities along the corridor would require relocation on both the north and south sides of Oxford Street West. While being one of the most expensive options to construct, this option would provide the best return on investment; being supportive of the London Plan's intensification policies and objectives. The implementation of dedicated rapid transit infrastructure is likely to spur redevelopment and intensification within the designated Rapid Transit Corridor and Transit Village areas along this segment.

This option is consistent with the Original Design proposed in the EPR, meaning there would be no further Environmental Assessment implications.

Capital Cost Estimate

The Segment 2 - Option 1 estimated total project cost ranges from \$34.9M to \$38.8M.

SEGMENT THREE: Oxford Street West from Wonderland Road North to Hyde Park Road

Recommended Option: Option 3. This option would include intersection improvements (e.g. extending right-turn lanes to provide transit queue jump lanes) at strategic locations along the corridor.

Based on expected ridership for this segment, Option 3 would provide the most appropriate transit capacity. Intersection improvements would minimize the impacts to trees, utilities, driveways, and the surrounding established residential neighbourhood, while remaining consistent with the London Plan's intensification policies for this area.

Investing in moderate infrastructure improvements would be appropriate given the limited growth and intensification expected in the majority of this segment and in line with MTO guidelines for transit-supportive measures.

(<http://www.mto.gov.on.ca/english/transit/supportive-guideline/index.shtml>)

Segment 3 is outside the scope of the EPR; however this recommended option would not have any Environmental Assessment implications as the proposed undertakings are pre-approved under the Municipal Class Environmental Assessment.

Capital Cost Estimate

The Segment 3 - Option 3 estimated total project cost ranges from \$8.8M to \$13.5M.

SEGMENT FOUR: Oxford Street West from Hyde Park Road to Westdel Bourne

Recommended Option: Option 4. This option would extend rapid transit service through future LTC service reviews, taking advantage of smart traffic signals to operate buses in mixed traffic with transit signal priority. This option would require no change to the road infrastructure but may trigger the need for additional fleet.

Based on expected ridership for this segment, this option provides the most appropriate transit capacity. Implementation of Transit Signal Priority measures would limit impacts to the surrounding residential neighbourhoods, as these measures would not require any property, and would not have impacts to trees, driveways or utilities. This option is most consistent with the City's intensification policy objectives. The majority of the segment is designated Neighbourhoods or Green Space, which are place types not intended to support high-density development.

Segment 4 is outside the scope of the EPR; however this recommended option would not have any Environmental Assessment implications as the proposed undertakings are pre-approved under the Municipal Class Environmental Assessment.

Capital Cost Estimate

The Segment 4 - Option 4 estimated total project cost is \$0.6M.

FINANCIAL IMPLICATIONS

In early 2018, the federal and provincial governments allocated a total of \$375.6 million to London to support transit improvement initiatives (\$204.9 Federal plus \$170.7 Provincial). Municipal matching requirements of \$136.6M would support total eligible funding program of \$512.2M.

In early 2019, the federal government announced the Investing in Canada Infrastructure Program (ICIP) - Public Transit Infrastructure Stream (PTIS), a cost-shared infrastructure funding program between the federal and provincial governments and municipalities. In March 2019, City Council approved a list of ten transit and transit-supportive projects to be submitted under the ICIP-PTIS program. This list included the Downtown Loop, the East London Link, and the Wellington Gateway. In June 2019, the Government of Ontario approved \$103.1 million to support these projects, followed by approval for \$123.8 million from the Government of Canada in August 2019. The ten approved PTIS projects will utilize \$225.1 million of the \$375.6 million allocation, leaving an available balance of \$150.5 million.

A placeholder for transit connections in the North and West was approved in the 2020 – 2023 Multi-Year Budget (see Table 1). A total of \$73.7 million is in the capital budget for the West Connection.

Table 1 - West Connection in 2020-2023 Multi-Year Budget

\$(000's)	Life to			Total
	Date	2020-2023	2024-2029	
West Connection				
Federal/Provincial Share	663	550	43,257	44,470
Municipal Share	2,905	9,200	17,143	29,248
Total	3,568	9,750	60,400	73,718

Remaining Allocated Funding - Taking into account the Federal/Provincial share in the North and West “placeholder” budgets (\$43.8 for the West (Table 1 above) and \$84.2 for the North, for the years 2020-2029 only), plus \$8.7 million in approved overlapping funding in other PTIS related projects (TIMMS, Oxford-Wharncliffe Intersection Improvements), there is \$31.2 million of allocated Federal/Provincial funding remaining from the available balance of \$150.5 million. Including the required 26.7% municipal contribution, there is approximately \$42 million of project funding still available for transit related projects, noting that the matching municipal share is currently unfunded.

SUMMARY

The recommendations outlined in this report are the culmination of a comprehensive review that sought to determine how best to serve west London’s transit needs, now and for years to come. They represent the best opportunity to capitalize on available funding opportunities, while delivering excellent value for the people of London, and west London in particular.

To support appropriate levels of transit infrastructure investment along the corridor, each area’s distinct ridership needs, land uses, traffic volumes and cultural and environmental conditions were considered. The segment-by-segment recommendations in this report balance the need to maintain existing traffic capacity with the unique ridership requirements of each area. They thoroughly consider the potential transit benefits against other key considerations, such as physical impacts (for example, to trees and properties), operational impacts, study implications and cost.

Whether closer to the Downtown or further west toward London’s outer limits, the City’s objectives for intensification and development are upheld along the corridor, with recommendations aligning with enhanced growth in areas where that is the goal, and supporting neighbourhoods and green space, where intended.

The recommendations presented have no impacts on the existing Environmental Assessment, meaning the City can capitalize on years of existing study and consultation and move forward with implementing the recommended improvements without investing additional time or money in further study.

Together, the recommendations for the four segments of the West Corridor represent the best opportunity to maximize the City’s return on investment while delivering improved transit to serve West London now and in the future.

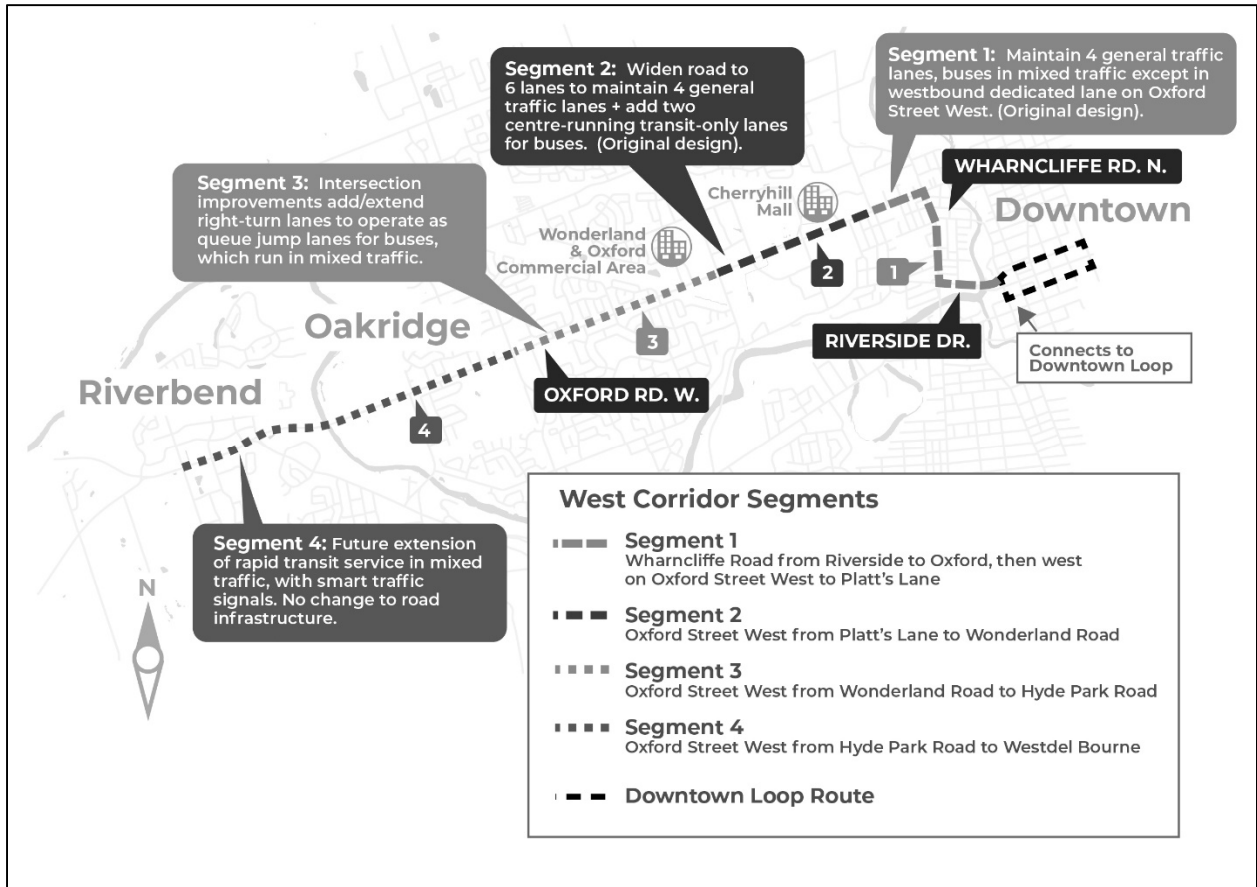


Exhibit 3: West Corridor Recommended Options: Segments 1 to 4

SUBMITTED BY:	
JENNIE DANN, P.ENG. PROJECT DIRECTOR, MAJOR PROJECTS	
CONCURRED BY:	RECOMMENDED BY:
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Attach: Appendix A – West Corridor Alternatives – Summary Memorandum
cc. London Transit Commission

Appendix A