London Bus Rapid Transit
Transit Project Assessment Process
Environmental Project Report — DRAFT
Draft Environmental Project Report (April 2018) – About this Document

This draft Environmental Project Report (EPR) has been prepared to satisfy the requirements of the Transit Project Assessment Process (TPAP, O. Reg. 231/08).

This document is a draft and will undergo technical review by the Ministry of Environment and Climate Change (MOECC), as illustrated in the Exhibit 1 below.

Exhibit 1 – Process from Draft EPR to Final EPR

- Ministry of the Environment and Climate Change technical review
- Agency and Stakeholder review
- Environmental Project Report is updated based on comments received
- 120-day Consultation during TPAP
- Final EPR
- Final EPR Statement of Completion
- Issued for 30-day public review at the end of 120-days
- 35 days for Minister to act
- Subject to Minister’s Notice

However, this report is written as if it is the Final EPR, at the end of the 6-month TPAP, with the intent of streamlining the review process during TPAP. As a result, certain sections are in-progress, and certain sections will be updated before and during TPAP, including:

- Section 5: Public consultation during the 120-day TPAP process will be conducted to allow the public more opportunity to review and provide input on the design. Comments from the public, stakeholders, regulatory agencies and Indigenous communities will be collected, considered and incorporated into the EPR during the 120-day period
- Sections 2, 4 and Appendix A: Design refinements may be incorporated based on feedback received from the public and technical agencies.
- Sections 6 and 7: Permits, approvals, and commitments to future work will be updated based on feedback received from the public and technical agencies.
- Appendices: A number of technical supporting studies were completed and are currently under review by the City of London’s Advisory Committees and provincial Ministries. When comments from these bodies are received, the appendices will be updated.

At the end of the 120-day consultation period, the final EPR will be published and the 30-day public review period will commence. Interested persons will be able to review the final EPR and submit written objections to the Minister of MOECC on matters of provincial importance. This process is illustrated in the timeline below.

BRT Timeline

Draft EPR
- Ministry of the Environment and Climate Change technical review
- Agency and Stakeholder review

120-day Consultation during TPAP
- Environmental Project Report is updated based on comments received
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Final EPR
- Subject to Minister’s Notice

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At the end of the 120-day consultation period, the final EPR will be published and the 30-day public review period will commence. Interested persons will be able to review the final EPR and submit written objections to the Minister of MOECC on matters of provincial importance. This process is illustrated in the timeline below.

BRT Timeline

Winter 2015
- The Rapid Transit Master Plan (RPM) launches London’s Rapid Transit initiative with the first public Information Centre in January

July 2015
- City Council approves the Rapid Transit Master Plan (RPM), which gives the green light to a BRT system and defines the BRT network

August 2015
- 45-day public review period for Londoneers to give feedback on the RPM

February 2016
- After refining the design options based on stakeholder input and key criteria, BRT feasibility team public events to present recommended design to the public and provide feedback

April 2016
- Final design complete

Summer 2016
- BRT feasibility team hosts Public Information Centre as part of final 120-day draft consultation period to give Londoneers another opportunity to provide input into the BRT plans

Winter 2020
- BRT teams continue consultation with the public, property owners, businesses, regulatory agencies and First Nations communities to refine the detailed design

2018/19
- Shows in the ground Construction begins with parking and elements of the BRT in 2018, such as smart traffic signals, BRT multi-construction begins in 2019, with an emphasis on the rapid transit system, BRT teams continue consultation with the public and property owners.

Design Phase
- 2019

Construction Phase
- 2019/20

Exhibit 1 – Process from Draft EPR to Final EPR
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EXECUTIVE SUMMARY

ES.1 Introduction

The City of London (the City) is located in southwestern Ontario with a population of 383,822. Based on the current population, London is the largest city in Canada without a rapid transit system. The London Plan (2016) forecasts 77,000 new residents and 43,000 more jobs by 2035. Recent forecasts completed as part of the ongoing Development Charges Background Study have updated population growth to 84,000 new Londoners by 2039. The introduction of Rapid Transit will help London continue to attract growth, and provide more transportation options to help the existing population travel through the City more efficiently.

The City of London has undertaken several studies over the last decade related to improving transit reliability and frequency. The City’s new growth management strategy, as outlined in The London Plan (2016), aims to balance how London grows by promoting the efficient use of infrastructure through transit oriented development to create a more sustainable and livable urban form.

As part of achieving this aim, the City proposes a Bus Rapid Transit (BRT) system, with dedicated transit lanes, as illustrated in Exhibit ES-1 and Exhibit ES-2, which will:

- Manage growth and transportation capacity constraints;
- Improve transit reliability, travel times, and service frequencies;
- Create an environment that supports investment in higher density, mixed-use residential, and commercial developments;
- Increase resiliency to climate change; and,
- Offer a mode of transportation that is an attractive alternative to the personal vehicle.

London’s Rapid Transit Initiative Master Plan (RTMP) (2017) examined transit corridors in London to identify a Rapid Transit (RT) network that will integrate with the existing transit system and land uses (current and future). The study was undertaken as a Master Plan in accordance with the requirements of the Municipal Class Environmental Assessment (MCEA) (2000, as amended to 2015). A preferred RT network was developed based on guiding principles set out by the City, and was approved by London’s City Council on July 25, 2017. The RTMP defined BRT as the transit technology, the network of streets with dedicated transit lanes, and the preliminary list of Rapid Transit stops (Exhibit ES-3).

The City proposes to create this BRT network of dedicated transit lanes and is evaluating the environmental effects of this transit project in accordance with the Transit Project Assessment Process (TPAP).

1 Census Profile, 2016 Census.
Study Area
The study area for this TPAP includes the corridors identified in the RTMP for the approved BRT network (Exhibit ES-3). The approved BRT network has been refined since the Rapid Transit Master Plan (RTMP), based on stakeholder and public consultation. The transit project is made up of a north-east route and a south-west route totaling approximately 24 km of primarily dedicated transit lanes, and a park-and-ride facility located off of Exeter Road near Wellington Road, north of Highway 401.

Exhibit ES-3: London’s Bus Rapid Transit Network

Related Studies
While the development of a Rapid Transit strategy has been on-going for nearly a decade, the RTMP is built on two important planning documents.

Smart Moves 2030: The New Mobility Transportation Master Plan (2013) aims to provide more attractive travel choices through transit service improvement and increased support for walking, cycling, and carpooling. Balancing Rapid Transit with parallel road expansions and network improvements, the Transportation Master Plan is intended to support how all Londoner’s get around the City. The plan also identifies the mutually supportive relationship between Rapid Transit (RT) and intensified development.

The London Plan (City of London Official Plan, Council Adopted 2016) builds off of the Provincial Policy Statement (2014), encouraging infill development and increased density in many areas of the city to promote walkability, revitalization of neighbourhoods and business areas, and balancing the costs associated with outward growth. Included is the City Structure Plan which identifies three different policy areas:

- **Urban Growth Boundary** – boundary between urban and rural London, within which all future urban development will occur.
- **Primary Transit Area** – centrally located area that will accommodate residential intensification, and improvements to transit and active transportation facilities. The goal is for 75% of all intensification to occur within the Primary Transit Area.
- **Central London** – central area that contains the downtown, and will accommodate intensification with the potential for greater heights and densities than in other neighbourhoods. This area will also have a high standard for urban design, and support high-quality pedestrian, cycling and transit environments.

The City Structure Plan also identifies RT Corridors that radiate from downtown to four Transit Villages, which are planned to become higher density mixed-use neighbourhoods and business areas located around RT stops.

Many other policies, studies, and recently completed or on-going plans and environmental assessments have been considered in the development of this transit project.

Background
The vision for London’s Bus Rapid Transit is built on the directions and policies set out in the London Plan, as well as five guiding principles established through the RTMP.

**Principle 1: Economic Development and City Building**
Positioning London to attract new talent, jobs, and investment, will help sustain economic prosperity for all residents and businesses. The system will connect and invigorate major institutions, support the city-building efforts underway in the downtown, and enhance London’s ability to attract new residents and investments. BRT will help realize the vision of the growth management strategy that focuses on promoting infill and intensification in strategic areas.

**Principle 2: Transportation Capacity and Mobility**
Improving travel options for all residents will be an important step in mitigating and managing congestion in London. Dedicated BRT lanes will make public transit more
reliable, improve travel times, and enhance the user experience. This can be a catalyst for shifting mode choice away from personal automobiles to other sustainable modes. Integrating with active transportation modes (such as walking and cycling), with a focus on enhancing the street-level experience for pedestrians, and connecting to regional transportation hubs, will position BRT as a keystone of London’s emerging multi-modal transportation network.

**Principle 3: Community Building and Revitalization**

Rapid Transit needs to do more than just move people; it needs to create a sense of place and civic pride in the communities it connects. The system needs to improve accessibility for all residents across the city, not just those living in close proximity to a BRT stop. Most importantly, BRT needs to help revitalize the City by attracting new growth and supporting compact and complete developments in strategic areas. Increasing density must be done strategically in order to create a vibrant, safe and inviting experience for pedestrians at street level.

**Principle 4: Ease of Implementation and Operational Viability**

BRT will travel along busy roadways and through existing vibrant communities that will need to continue to function through the construction period. During construction there will be localized impacts to traffic and access along the corridors. Minimizing disruptions and impacts during implementation is important, and the City will work closely with residents and local businesses. Once completed, the dedicated transit lanes will be able to adapt operationally for future technologies. Success of the BRT network also requires the system to be financially sustainable in the short and long-term.

**Principle 5: Fiscal Responsibility and Affordability**

Fiscal responsibility will be achieved by considering the return on BRT corridor investments in terms of ridership, transit user time savings and other transportation and environmental benefits. Affordability means balancing the financial resources required over the life of the project to maintain a healthy financial position.

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The Transit Project Assessment Process (TPAP)

This study was completed in accordance with **Ontario Regulation 231/08: Transit Projects and Metrolinx Undertakings under the Environmental Assessment Act (Ontario)**. The TPAP, as defined by this regulation, is required to be completed within six months of being initiated. The process includes consultation with a variety of interested persons and agencies, identification of potential impacts, mitigation measures, and corresponding documentation of the project. This draft Environmental Project Report does not include any alternatives considered during pre-planning, as the TPAP starts with a defined transit project and is a focused impact assessment of that project. Exhibit ES-4 illustrates the overall process and timelines.

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Environmental Project Report Structure

The location of information to satisfy the requirements of Ontario Regulation 231/08 is provided in Exhibit ES-5.

Exhibit ES-5: EPR Requirement Table

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>A statement of the purpose of the transit project and a summary of any background information relating to the transit project;</td>
<td>1.1, 1.3</td>
</tr>
<tr>
<td>A final description of the transit project including a description of the preferred design;</td>
<td>2</td>
</tr>
<tr>
<td>A description of any other design methods that were considered once the project commenced the TPAP (Note: Does not include any alternatives considered during pre-planning as TPAP starts with a transit project and is focused on an impact assessment of that project);</td>
<td>To be addressed during TPAP</td>
</tr>
<tr>
<td>A map showing the site of the transit project;</td>
<td>1.2</td>
</tr>
<tr>
<td>A description of the local environmental conditions at the site of the transit project;</td>
<td>3</td>
</tr>
<tr>
<td>A description of all studies carried out, including a summary of all data collected or reviewed and a summary of all results and conclusions;</td>
<td>3, 4</td>
</tr>
<tr>
<td>The assessments, evaluation and criteria for any impacts of the preferred design method and any other design method (described above) that were considered once the project’s TPAP commenced (does not include pre-planning work);</td>
<td>4</td>
</tr>
<tr>
<td>A description of any proposed measures for mitigating any negative impacts the transit project might have on the environment;</td>
<td>4</td>
</tr>
<tr>
<td>If mitigation measures are proposed, a description of the proposal for monitoring or verifying the effectiveness of the mitigation measures;</td>
<td>4</td>
</tr>
<tr>
<td>A description of any municipal, provincial, federal, or other approvals or permits that may be required;</td>
<td>6</td>
</tr>
<tr>
<td>A consultation record, including:</td>
<td>5</td>
</tr>
<tr>
<td>• A description of the consultations and follow up efforts carried out with interested persons, including Indigenous communities;</td>
<td></td>
</tr>
<tr>
<td>• A list of the interested persons, including Indigenous communities who participated in the consultations;</td>
<td></td>
</tr>
<tr>
<td>• Summaries of the comments submitted by interested persons, including Indigenous communities;</td>
<td></td>
</tr>
<tr>
<td>• A summary of any discussions with Indigenous communities including discussions of any potential impacts of the transit project on constitutionally protected Indigenous or treaty rights, and copies of all written comments submitted by Indigenous communities; and,</td>
<td></td>
</tr>
<tr>
<td>• A description of what the proponent did to respond to concerns expressed by interested persons, including Indigenous communities.</td>
<td></td>
</tr>
</tbody>
</table>

If a “time out” is taken during the transit project assessment process, a summary of each issue including: A description of the issue; A description of what the proponent did to respond to the issue and the results of those efforts; and, The dates that notices for the “time out” were given to the Director and the Regional Director. Not applicable

This draft Environmental Project Report (EPR) summarizes the work completed in preparation for initiating the TPAP. The draft report will be circulated to the Ministry of Environment and Climate Change (MOECC) and relevant provincial ministries prior to initiating the six-month TPAP.

During the 120-day TPAP consultation period, the project team will consult with interested parties and the public regarding the project. The draft EPR will be finalized, incorporating comments received. The EPR will be submitted to the MOECC within 120 days of issuing the Notice of Commencement, and will be issued for a 30-day public review.

ES.2 Project Description

The 24 km BRT Network has two routes: North-and-East, and West-and-South, with a total of 38 stops.

The two BRT routes and associated stop locations are illustrated in Exhibit ES-6 and Exhibit ES-7. The BRT network is proposed to operate seven days a week, from 6 a.m. to 12 a.m. (midnight). The London Transit Commission (LTC) five year service plans includes extending operating hours to 1 a.m. in 2019. The north-east route is planned to have a bus every five minutes to serve forecasted transit ridership demand during peak periods, and 10 off-peak. The south-west route is planned to have 10-minute bus frequency during morning and afternoon weekday peak periods as well as off-peak. Riders will be able to transfer between the two routes at the Central Transit Hub, located at the corner of Wellington Street and King Street in downtown London, as well as at the intersection of Queens Avenue and Clarendon Street.

The BRT fleet will include 28 new articulated buses.

The procurement of the vehicle fleet will consider including features such as:

- Higher passenger capacities (up to 130 passengers) than standard 40’ buses;
- Faster boarding and alighting through three bus doors (front, middle, back);
- Accessibility features including low floor, wide aisles, automated stop announcements and display system, and dedicated priority seating and allocated mobility aid spaces;
- Smart buses equipped with technology such as a traffic signal priority system, a smart fare card system, automatic passenger counters, computer aided dispatch and automatic vehicle location; and,
- Cycling racks on buses.
Exhibit ES- 6: North-and-East Route Key Plan

Exhibit ES- 7: West-and-South Route Key Plan
All BRT stops will have similar designs and layouts to allow for passenger familiarity and easy recognition.

The conceptual BRT stop design is modular, offering flexibility to scale the passenger amenities at any given stop, while maintaining consistent architectural characteristics across the system. The typical BRT stop design, as illustrated in Exhibit ES-8, Exhibit ES-9, and Exhibit ES-10, has three main areas:

1. Entrance Area with off-board fare payment (smart fare card readers and ticket vending machines);
2. Waiting Area ranging from fully enclosed and heated area, to open area with or without a canopy; and,
3. Boarding Area with amenities such as benches, waste receptacles, and leaning bars, among other features.

The stops will feature BRT-specific branding, and there will be opportunities to customize certain elements to highlight neighbourhood features. Bicycle parking will be provided in the boulevard of the road near the intersection.

For the majority of the network, the BRT lanes will be centre-running with traffic lanes on either side. Other configurations include curbside and mixed-use options.

The centre-running BRT design will include a raised curbed island (approximate height of 150 mm or 6 inches) between the two dedicated transit lanes. This will change unsignalized side streets and driveways to right-in / right-out access only. Dedicated left-turn lanes with fully protected signal phasing will be provided at most signalized intersections to accommodate U-turn traffic. Exhibit ES-11 illustrates the typical changes at unsignalized intersections and driveways.
Exhibit ES-11: Typical Changes to Unsignalized Intersections and Driveways

In most areas of the BRT network, the existing capacity for general traffic will be maintained by widening the roadway to accommodate the dedicated transit lanes and maintain the same number of traffic lanes as today. In some areas, where the right-of-way is constrained and widening is not feasible, one existing traffic or parking lane per direction will be converted to a dedicated transit lane. Exhibit ES-12 illustrates which BRT corridor roads will convert one traffic lane per direction to transit-only, and some of the other planned improvements around the city. Over the 24 km BRT network, only 5 km of roadway will require conversion of existing travel lanes to dedicated transit lanes.

Exhibit ES-12: Changes to Lane Configurations

A recently initiated study, separate from this TPAP, will examine Intelligent Transportation Systems on a city-wide basis, which are needed to support the priority traffic signals required for BRT, and provide a Traffic Control Centre. Other ongoing and planned studies will result in physical or operational improvements to other arterial roads such as Western Road, Wharncliffe Road and Adelaide Street.
There are several existing bridge structures along the BRT corridors; some structures will be modified to accommodate dedicated transit lanes and active transportation facilities.

The following structures will require modification:

- Western Road Bridge;
- Western University Pedestrian Tunnel;
- University Drive Bridge;
- Clark’s Bridge;
- Queens Avenue Bridge;
- Mud Creek Culvert; and,
- Highbury Ave Bridge (over Canadian Pacific Rail).

The BRT system is designed with key consideration given to bicycle and pedestrian modes, in accordance with “complete streets” principles.

Complete streets are streets that designed to accommodate all modes. With this in mind, streets with transit lanes will also move pedestrians, cyclists and cars.

The Thames Valley Parkway, along with other connected pathways, offers over 200 km of off-street trails. London ON Bikes – London’s Cycling Master Plan (September 2016) was introduced to build on this foundation to improve the network in anticipation of BRT and other network improvements.

Cycling has been incorporated along BRT corridors where possible and where appropriate within the context of the cycling network. However, alternate parallel connections will be considered where BRT corridors are constrained.

Bike lanes will typically be 1.5 m wide per direction, or 3.0 m wide for a two-way cycling facility or multi-use path. Exhibit ES-13 illustrates the locations of the cycling facilities and connections that are incorporated in the BRT design.
Exhibit ES-14: King Street at Ontario Street, Looking West

Rendering may not represent final design.

Improved streetscape elements will be incorporated on BRT corridors.

Sidewalks will be continuous on both sides of the streets along BRT corridors. To be compliant with the Accessibility for Ontarians with Disabilities Act (2005), a minimum clear width or clearway of 1.5 m will be provided in constrained areas. In most areas, a clearway width of at least 2.0 m will be provided. Other accessible sidewalk design elements include maximum slopes of 1:20, a slip-resistant surface, and curb ramps at intersections with tactile warning strips and high tonal colour contrast.

Planting Zones or Planting and Furnishing Zones will be incorporated where space allows, typically located between the sidewalk and the curb, to provide extra buffer space between the pedestrian clearway and the roadway. The Planting Zone will feature street trees planted in sod, while the Planting and Furnishing Zone will consist of hardscape material with street trees planted in grates or planters, as well as lighting and street furnishings.

Median islands and platform ends provide opportunities to incorporate placemaking elements in certain areas such as public art, planters, and street trees, depending on the size of the median island.

The streetscape design will adhere to Crime Prevention through Environmental Design principles, optimizing sight lines and minimizing opportunities for crime along the BRT corridors.

Street Furniture such as benches, waste receptacles, bike parking and newspaper corrals will be situated in the Planting and Furnishing Zone where appropriate.

Public Art can be used in significant locations where there is available room within the right-of-way to help establish a strong sense of place along the BRT corridor. Vertically oriented public art will likely provide the most visual impact in most circumstances.

Street Lighting will be either maintained or improved to meet current standards. In the Downtown and Transit Village Place Types, and where boulevard cycling facilities are provided, person-level lighting will be considered. Lighting under bridges will be designed with either ceiling or wall-mounted fixtures.

Intelligent Transportation Systems will support efficient and reliable transit operations.

Consistent with ITS features in use on the current LTC service and fleet, Intelligent Transportation Systems elements for the Rapid Transit service will include:

- Transit Traveller Information System, to provide information in different ways to enhance passenger experience, including visually or hearing impaired passengers. This system will include displays with real-time information, audible pre-recorded announcements of next stop, and a public address system for ad-hoc messages on BRT vehicles and/or at BRT stops, among other services. This system could also enhance the existing web, mobile phone and interactive voice response services offered by LTC.

- Advanced Traffic Management Systems, to communicate with the traffic signal control centre to help improve traffic flow along the BRT corridors, by adjusting signal phase timing using real-time and historical data. Real-time data is collected using transit signal priority, vehicle detection systems, and closed circuit television cameras along roadways, among other systems. Transit Signal Priority will provide BRT vehicles with more green light time at traffic signals.

- Communication System, which can provide data and voice exchanges between BRT vehicles, supervisor and maintenance vehicles, runningways, roadways, maintenance and storage facilities, and transit control centres.

- Computer-Aided Dispatch/Automatic Vehicle Location System, to provide more efficient responses to incidents by analyzing service data from vehicles, and supporting dispatchers by prioritizing issues.
London BRT Transit Project Assessment Process – Draft Environmental Project Report

- Fare Collection System, including smart fare card readers, ticket vending machines, cash fareboxes, and a central server for transaction processing and reporting.
- Security System, which will use a variety of technologies to communicate with transit control centres and emergency services to enhance safety along the BRT network. These technologies include closed circuit television cameras on vehicles and at stops, covert alarms for BRT vehicle operators, and emergency call boxes at stops.

These systems will integrate with existing and planned LTC systems, and the planned city-wide traffic control centre and signal coordination program.

**Bus Rapid Transit will be integrated with Express Bus and Local Bus routes to support city-wide increases in transit-service.**

Bus Rapid Transit will move more people, and support the City’s goals to increase transit ridership by creating a more reliable alternative to the personal automobile, and attracting riders who have a choice of modes. Local service will be restructured around the BRT to enhance the effectiveness of feeder routes, and improve transit throughout the entire City.

**Bus Rapid Transit will be integrated with existing regional transit connections.**

Inter-regional transit services in London are offered by VIA Rail and Greyhound Canada. VIA Rail offers passenger rail service from the London Station on York Street at Clarence Street. Greyhound Canada offers bus service from the London Bus Depot on York Street at Talbot Street, and from the Western University Campus. High-speed passenger rail service between Toronto and London is currently planned to be in operation as early as 2025.

Transit connections to the London International Airport will be maintained through the existing transit route from Oxford Street West near Second Street (Fanshawe College). With future study, dedicated transit lanes could be extended to the east from the East Turnaround to accommodate future BRT service, as it was identified as a corridor for future expansion in the RTMP.

**Land and Property Requirements**

The BRT network is mainly located along the existing municipal road allowance, with the exception of within the Western University campus, and is being designed with the goal of minimizing property requirements.

During the development of the preliminary engineering design, approximately 525 properties were identified as having impacts, ranging from full acquisition to front or side-yard impacts.

**Project Implementation**

Experience from other Rapid Transit projects suggests that implementation (detail design and construction) of the London BRT should take between eight and 10 years. Detail design may commence in 2019, with construction of the first segments starting in 2020, depending on the coordination with other City infrastructure projects. The approach for tendering and constructing the project is yet to be determined.

The London BRT is expected to be constructed in stages, and the implementation plan will be refined through the detail design process.

**ES.3 Existing Conditions**

Section 3 of this draft EPR describes the existing conditions along the BRT corridors including transportation and utilities, natural environment, socio-economic environment, cultural environment, and matters of provincial importance.

**ES.4 Impact Assessment, Mitigation and Monitoring**

Section 4 of this draft EPR documents the potential impacts, and the proposed mitigation measures and monitoring efforts to be undertaken as part of the project. The following sections highlight impacts and mitigation measures identified for the BRT network.

**Transportation**

**Transit Network**

With lanes dedicated for transit, and reliable and frequent 5 or 10-minute service, the BRT network will offer improved travel times across the majority of the network.

BRT stops are spaced farther apart than local transit stops, further improving travel times. Increased stop spacing will, however, increase walking distances for some passengers. Some express and local bus routes will be able to use the dedicated transit lanes and stops for short sections of inter-lined service. BRT stop placement considered existing local land uses that are major trip generators, to balance speed and service.

A reduced number of local transit routes will still operate along the BRT corridors in general traffic lanes. These local bus routes will have stops closer together than the BRT stops, which will provide better access for passengers with limited mobility, and connect those passengers to the BRT system at the next BRT stop. Local routes which meet or cross the BRT corridors will be realigned to connect to BRT stops where feasible.

During construction, local routes may be temporarily diverted as needed. These changes will be communicated well in advance during the construction period. Local service will be reviewed and adjusted leading up to the start of BRT operation, and on an annual basis during BRT operations. Communicating these changes is described in the next section.

**Traffic Operations**

Along the BRT corridors, priority is given to reliable transit service, safe and convenient pedestrian access, and access to trip generators and adjacent neighbourhoods. The
preferred design includes intersection improvements such as auxiliary turn lanes and smart traffic signals to mitigate congestion. Intersections which are experiencing congestion today are likely to continue to experience congestion with BRT. This is primarily due to background traffic growth, the conversion of main street left-turn movements to fully-protected operations, and increases in U-turn demand.

To minimize traffic delays and maintain access during construction, BRT construction will occur in phases, in coordination with other capital projects in the City.

Utilities

**Surface and Sub-surface Utilities**

There are existing utilities within and across the BRT corridors that will require relocation in order to address conflicts with BRT infrastructure. Through coordination with all of the potentially impacted service providers, utilities found within the proposed platforms will generally be relocated to minimize potential disruption to transit during maintenance and repair activities. Future road disruptions for lifecycle repairs will be reduced, as part of the road reconstruction works associated with BRT, by renewing underground infrastructure along with BRT-related road construction.

Potential impacts to surface and sub-surface utilities may include service disruptions to residents and businesses during construction. Impacts due to utility relocations can potentially include access restrictions, road closures, sidewalk closures, traffic detours and delays. Depending on the proposed location of the relocated utilities, impacts to the public can be limited and minimized dependent upon available space within the road allowance.

To minimize potential disruption due to utility relocations, construction staging will be considered during detail design. Traffic management plans will be created to alleviate and minimize disruption. Standard mitigation practices will be used for other impacts associated with construction, such as dust, and noise.

**Stormwater Management**

The majority of the BRT corridors can currently be characterized as having a high level of urban development. As a result, there will be a nominal increase in the impervious surface area, which will result in a nominal increase in peak storm flows. In all corridors, consideration will be given to the installation of Low Impact Development measures for both quantity and quality control wherever feasible, such as:

- Bio-retention (within planters, curb extensions, bio-retention units);
- Swales (enhanced grass swales, bio-swales);
- Perforated pipes;
- Prefabricated modules (precast tree planters, soil support systems, phosphorus removal, proprietary stormwater treatment devices); and,
- Permeable pavement (pervious concrete, porous asphalt, permeable pavers).

These Low Impact Development measures will assist in providing quality control, as well as some quantity and erosion control, in order to meet upcoming Ministry of the Environment and Climate Change requirements to match the hydrologic cycle as best as possible.

**Natural Environment**

**Groundwater and Contaminated Sites**

There are no areas of significant potential for contamination at BRT stop locations. In general, low to moderate risks related to subsurface conditions are expected at a limited number of sites. The majority of potential contaminates of concern are petroleum hydrocarbon and chlorinated solvents associated with existing and former gas stations and service centres. As a result, construction at or near the groundwater level may require treatment of dewatering discharge. It is anticipated that, for the majority of the BRT stop locations, active remediation is probably not warranted given the relatively nominal depth of excavation at these locations.

**Terrestrial and Aquatic Environments**

The majority of the infrastructure required is located in the existing municipal road allowance and in urbanized areas. In order to modify the existing watercourse crossings, localized effects will occur as a result of construction activities, such as vegetation removal, increased sedimentation, erosion and turbidity, soil compaction, and habitat loss or fragmentation. These effects will be mitigated through avoidance of direct impacts to species at risk.

Indirect impacts may include temporary impacts such as those associated with the temporary disruption of features / habitats or displacement of species with changes in site conditions, or long-term effects on surface drainage, introduction of invasive species, and increasing anthropogenic pressures from noise and light. This project provides an opportunity for invasive species management along the corridors.

Mitigation and compensation measures will aim to minimize environmental impacts and reduce the magnitude and extent of negative net effects. Construction mitigation includes measures to avoid and/or minimize potential impacts to the aquatic environment and surface water through the use the following techniques:

- Best management practices for erosion and sediment control and excavation dewatering;
- Constraints on construction timing, equipment movement, fueling and maintenance, and materials storage;
- Use of a debris containment system for bridge works; and,
- Appropriate construction period and post-construction period compliance monitoring.
Air Quality
An Air Quality Impact Assessment was completed to assess the effect of the proposed Project’s operations and construction on local air quality. The air quality impacts of the development of the project at these receptors have been assessed and compared to air quality threshold limits.

Noise and Vibration
Noise mitigation measures will be implemented at four locations, as shown in Appendix A. Vibration impacts on nearby vibration sensitive areas due to the operation of the proposed BRT system is not expected to be a concern. Mitigation measures during construction are recommended, and will be specified during the next design phase.

Socio-Economic Environment
The BRT network will be within walking distance of 40% of homes and 60% of jobs. Once the BRT system is implemented, the Rapid Transit Corridors are envisioned to become vibrant, mixed-use communities that border the length of the system. The land uses along the corridors will vary depending on the character, uses and intensity of the surrounding areas. Some will be primarily residential with small-scale, street-facing commercial uses, while others may feature stand-alone commercial uses or mixed-use development. The corridors will provide easy access to Downtown and Transit Villages via Rapid Transit, and will be fundamentally walkable and transit-oriented. Areas closer to Rapid Transit stops may be more appropriate for greater density and height to support transit usage for a greater number of residents and workers.

Rapid Transit will generate jobs and contribute to London GDP during construction and throughout the project’s lifecycle.
During construction, the project is expected to generate over 4,000 employment-years and increase GDP by approximately $260 million. These short-term economic benefits are associated with the construction of the BRT network and are quantified in terms of the estimated number of direct and indirect person-years of employment, wages and additional GDP.
During the lifecycle of the project (from opening day in 2028 until 2050), the project is expected to generate 225 employment years, and contribute an additional $9 million in GDP per year. These long-term economic benefits are associated with the ongoing operations of BRT, and are quantified in terms of the estimated number of direct and indirect person-years of employment, income (i.e. wages/salaries) and additional GDP. These long-term economic benefits are directly tied to the annual operating costs, and can be impacted by changes in ridership, operational subsidy, and service standards.

Rapid Transit will inspire city-building along its corridors and increase land value.
Investment in transit often results in changes in land value. Case study research has shown these changes are generally positive (i.e. increased property values) as lands become more desirable in their existing form, and/or redevelop into higher density uses.

An estimated uplift in land value in the order of $90 million could be realized along the proposed BRT corridors if the City of London grows as anticipated. Some vacant or largely underutilized properties will see a major uplift in value and others will see little to none. The average uplift in land value along the corridors is anticipated to range from 2% to 10%.

Several significant recreation and entertainment facilities and attractions are located along the BRT network.
Londoners and visitors will have improved access to these facilities with the implementation of BRT. This will help achieve the guiding principle of improving access to recreation as set out in the Parks and Recreation Master Plan, and will provide improved access to London’s entertainment attractions, making it a more attractive place to visit, live, work, and play.

Cultural Environment
The BRT network was designed to stay within the existing road allowance wherever possible to minimize or avoid impacts to potential archaeological resources.

There are 20 to 30 sites with the potential for archaeological resources that may be disturbed by the project. Additional archaeological assessments are recommended to confirm the potential, prior to detail design.

The BRT network was designed to minimize impacts to existing heritage resources, wherever possible.
There are over 450 properties recommended for further cultural heritage evaluation within the project footprint, or within lands adjacent to the footprint. These properties have the potential to contain features of cultural heritage value or interest. In areas where impacts are anticipated, avoidance is not possible, mitigation measures will include context-sensitive design of the stops and platforms in areas where cultural heritage resources have been identified. Identified potential heritage resources will be subject to Cultural Heritage Evaluation Reports and/or Heritage Impact Assessments prior to construction, and will be monitored during construction activity.

ES.5 Consultation Process
The City of London initiated a consultation program for the Bus Rapid Transit (BRT) system in January 2015 as part of an extensive effort to collect and respond to comments and questions from various interested parties for the Rapid Transit Initiative Master Plan (RTMP). The RTMP was approved by London City Council in July 2017.
London’s consultation program continued into the pre-planning phase of the TPAP, which was initiated in September 2017, and will remain ongoing during TPAP. Details are provided in Section 5 of this draft EPR.

The goal of this ongoing consultation program is to engage people who have an interest in the proposed BRT system in meaningful discussion on challenges and opportunities, with the following objectives:

- Facilitate conversations with key regulatory agencies;
- Facilitate dialogue with stakeholder groups and the public;
- Minimize and mitigate impacts to property owners, local businesses and service providers;
- Build trust and accountability within the community;
- Provide for public and regulatory agency involvement in the corridor design process;
- Address and minimize concerns with potential construction and operations related impacts such as traffic management, traffic noise and visual changes;
- Fulfill the duty to consult with interested Indigenous communities;
- Use communication and presentation materials that convey key messages in a way that is understandable, and promotes a high degree of discussion on opportunities that will support the quality of life and preservation of the environment; and,
- Maintain an active correspondence and response log with regulatory agencies, authorities, stakeholders and members of the public involved throughout the pre-planning and the TPAP.

Notification Protocol

A number of communication tools and a variety of methods were used to notify stakeholders of events, provide project updates, and give the opportunity to provide comments. These included:

- Project website, www.shiflondon.ca, Facebook, Twitter, Instagram @shiftldnont;
- E-newsletters;
- Emails to interested persons on the master contact list;
- Emails to those who signed up on the project website;
- City-wide mail-outs that reached property owners, tenants and business;
- Targeted mail-outs to potentially impacted property owners, and those living within 50 m either side of the corridors;
- Media outreach, technical briefings for media and news releases;
- Meetings with stakeholder advisory groups including the Rapid Transit Implementation Working Group, Technical Agencies Group, Municipal Advisory Group, Community Stakeholders Group, and Emergency Services;
- Technical briefing packages for local politicians;
- Radio, print, poster and outdoor advertising alerting people to the events;
- Frequently Asked Questions (with answers) posted on the project website;
- Public Information Centre (PIC) and Open House Comment forms;
- PIC and Open House Summary Reports;
- Stop Features survey, asking participants to identify features they consider important to be included in BRT stops;
- Notice of TPAP Commencement; and,
- Notice of Completion of Environmental Project Report.

The public, stakeholders, regulatory agencies, Indigenous Communities and other interested parties had options to interact with the project team:

- Public Information Centres and Open Houses;
- Twitter, Facebook, Email;
- London’s BRT Project webpage: www.shiftlondon.ca;
- Face-to-face meetings and phone calls;
- Presentations and meetings with stakeholders (e.g., Business Improvement Areas, Neighbourhood Associations) and individual property owners;
- Presentations at Community Group and Ward meetings;
- Attendance and exhibits at community events; and,
- Contacting the project team directly through telephone, email or mail.

Master Contact List

A project contact list of regulatory agencies, conservation authority, local municipalities, Indigenous communities, impacted property owners, stakeholders and interested members of the public, was compiled during the development of the London RTMP.

The project contact list was carried forward into the pre-planning phase of the TPAP, and continually updated in response to project feedback and stakeholder interest. This list has been used for the distribution of project-related notices throughout the pre-planning phase, and will continue into the next phase.
Consultation during the Pre-Planning Phase

Consultation for the pre-planning phase has included:

- Consultation with the Director of the Environmental Approvals Branch at the Ministry of Environment and Climate Change;
- Updating the project website that was developed during the London RTMP process;
- Preparation of a contact list;
- Public Information Centre #5, which included nine events held on December 9, 12, 13, and 14, 2017 and January 24, 2018 to present the BRT corridor design alternatives;
- Five Open House events on February 28 and March 1 and 3, 2018 to present the emerging technically preferred design alternatives;
- Consultation with Indigenous communities identified as having a potential interest in the project;
- Meetings with the Rapid Transit Implementation Working Group, including project update presentations live streamed and recorded on YouTube; and,
- Meetings with identified key stakeholder groups including Technical Agencies Group, Municipal Advisory Group, Community Stakeholder Group, Emergency Services Group, property owners, and stakeholders.

This draft EPR and supporting technical reports will be circulated prior to starting TPAP to technical agencies, conservation authority, Indigenous communities, local municipalities and other stakeholders.

Consultation with the Ministry of the Environment and Climate Change

As required under O. Reg. 231/08, the City of London sent a letter to the Director, Environmental Approvals Branch at the Ministry of Environment and Climate Change, on September 12, 2017, to assist in identifying Indigenous communities which may have an interest in the BRT project.

Rapid Transit Implementation Working Group

The Rapid Transit Implementation Working Group was formed in Spring 2016 during the development of the RTMP, and is comprised of representatives from City Council and the London Transit Commission. The purpose of the Working Group is to advise Council on matters related to the planning and design of the BRT system.

Six meetings were held with this group between September 2017 to March 2018, covering:

- An overview of the Project and the TPAP;
- Consultation activity updates;
- Technical design updates;
- Public Information Centre updates;
- Expert panel review of the technical design; and,
- Review of Recommended Preliminary Engineering Design.

Consultation Groups

In Fall 2017, a Technical Agencies Group, a Municipal Advisory Group, a Community Stakeholders Group, and an Emergency Services Group were formed to effectively engage with a variety of stakeholders.

Public Meetings

Stops and Streetscapes Workshop

The Stops and Streetscapes Workshop was held on November 15, 2017, at the Central Library. The purpose of the Workshop was for the public to share ideas with the project team concerning the BRT stops and streetscape. A summary of the comments received at the Workshop is available in Section 5 of the draft EPR.

Public Information Centre #5

Public Information Centre #5 was held to obtain feedback from the public to aid in the evaluation of the BRT corridor design options for nine focus areas identified in the RTMP, plus the turnarounds for the north and west routes and Oxford Street West from Platt’s Lane to Wharncliffe Road. The focus areas were:

- North turnaround;
- Western University;
- Richmond Street North;
- Richmond Row;
- Downtown;
- Dundas Street;
- East turnaround;
- Wellington Road Curve;
- Wellington Road South;
- South turnaround;
- Oxford Street West from Platt’s Lane to Wharncliffe Road; and,
- West turnaround.
Additional information was presented on the project process, BRT vehicles, traffic impacts, and the natural environment, cultural heritage and existing archaeological conditions. A number of comments and questions were raised at the Public Information Centre (PIC).

A total of 555 individuals signed in at the December PIC events. An additional 234 individuals signed in at the two PIC events held on January 24, 2018.

**Open House**

Open Houses were held as a follow-up to Public Information Centre #5 to obtain feedback from the public on the emerging technically preferred designs of the project corridors for the same focus areas as Public Information Centre #5.

A number of comments and questions were raised at the Open Houses. A total of 496 individuals signed in at the five Open House sessions.

**General Public and Property Owners Correspondence**

The general public, businesses, community groups, and property owners have been consulted through various methods and events during the pre-planning phase, including individual letter, phone calls, meetings and site visits. Discussions with interested persons, business, agencies and property owners along the project corridors will continue up to, and during, the TPAP.

**Indigenous Community Engagement**

The Ministry identified a list of Indigenous communities which may have an interest in the BRT project. The City has communicated the project to the identified list, plus other communities. The combined list is as follows:

- Aamjiwnaang First Nation;
- Association of Iroquois & Allied Indians;
- Chippewas of the Thames First Nation;
- Haudenosaunee Development Institute;
- Haudenosaunee Six Nations Confederacy Council, Haudenosaunee Resource Centre;
- Kettle and Stony Point First Nation;
- London District Chiefs Council;
- Mississaugas of the New Credit First Nation;
- Moravian of the Thames First Nation;
- Munsee-Delaware Nation;
- Oneida Nation of the Thames;
- Six Nations of the Grand River;
- Union of Ontario Indians; and,
- Walpole Island First Nation.

**Consultation during the Transit Project Assessment Process**

During the 120-day TPAP consultation period, the project team will consult with interested parties and the public regarding the project. The draft EPR will be finalized, incorporating comments received. The final draft EPR will be updated to reflect the consultation and submitted to the MOECC within 120 days of issuing the Notice of Commencement, and will be issued for a 30-day public review.

**Future Consultation**

Consultation on this infrastructure project will continue after the TPAP. The Rapid Transit Implementation Office will continue to work with interested persons, businesses, agencies and property owners as detail design progresses, before and during construction.

**Permits and Approvals**

Section 6 identifies permits and approvals that may be required during the subsequent phases of the London BRT project, including detail design, construction, and post-construction.
At the federal level, the following permits and approvals may be required:

- Approvals under the Canadian Environmental Assessment Act (proponent will continue to assess to determine if any are applicable);
- Canadian Transportation Agency approval may be required for works within a railway right of way under the Canada Transportation Act;
- Permits for work with the potential to harm fish or fish habitat will be required from the Department of Fisheries and Oceans in accordance with the Fisheries Act;
- Species at Risk Act permits for impacts to federally listed species. The Department of Fisheries and Oceans will provide direction related to Species at Risk Act permit requirements; and,
- A new or modified Licence of Occupation under the Public Lands Act may be required where modifications of existing crossing are proposed.

At the provincial level, the following permits and approvals may be required:

- Permit to Take Water from the Ministry of the Environment and Climate Change (MOECC), under the Ontario Water Resources Act;
- Environmental Compliance Approvals from MOECC for new/relocated sewers and stormwater management outfalls, sewer use for discharge of dewatering effluent (compliant with Section 53 of the Ontario Water Resources Act and relevant MOECC guidelines);
- Archaeological and built heritage investigations will be conducted and the associated reports will be submitted to MTCS for review and acceptance, as required prior to any ground disturbance;
- Approval from Hydro One for crossing under its corridor near Exeter Road;
- A Highway Corridor Management permit from the Ministry of Transportation Ontario for the proposed park-and-ride at Exeter Road under the Public Transportation and Highway Improvement Act; and
- A Letter of Advice from the Ministry of Natural Resources and Forestry or an Overall Benefit Permit under clause 17(2)(c) of the Endangered Species Act.

At the municipal level, the following permits and approvals may be required:

- London City Council approval;
- A Heritage Permit for alterations and/or demolitions to properties designated under the Ontario Heritage Act; and,
- Approvals for work in the areas regulated by the UTRCA under the Conservation Authorities Act – Ontario Regulation 157/06, under O. Reg. 97/04.

ES.7 Commitments to Future Action

Section 7 of the draft EPR identifies commitments to future work to be completed during detail design, as well as prior to, during, and after construction of the BRT. Net effects, mitigation and monitoring details will be included. The following items will be addressed in the next phase of the project:

- Nest surveys for Barn Swallows (and other applicable species at risk present at the time) in the breeding season prior to construction activities on bridges;
- Entry-exit surveys for Chimney Swifts where damage to suitable chimneys is scheduled to occur. Surveys should be completed during the breeding season prior to commencement of the demolition or construction activities;
- Screening for suitable bat cavity trees where removal of mature trees are proposed to permit road widening;
- The need for additional targeted surveys for SAR mussels will be discussed with MNRF and DFO at detailed design, once footprint impacts are known, to address potential permitting and related works issues. Mussel rescue/relocations will be required at all locations where mussels have been confirmed within the in-water footprint;
- Completion of a Butternut Health Assessment for Butternut trees adjacent to Lambton Drive, if realignment or widening of the road is to occur within 50 m of the trees; and,
- Additional screening as required based on future changes to species’ listings or habitat regulations of the ESA.

Commitments to Future Cultural Environmental Work:

- Heritage Impact Assessments for all designated heritage properties and Heritage Conservation Districts that may be impacted by the project;
- Cultural Heritage Evaluation Reports for all properties with potential cultural heritage value or interest as determined through consultation with London’s Advisory Committee on Heritage; and,
- Stage 2 Archaeological Assessments, and Stage 3 and 4 Archaeological Assessments if recommended by Stage 2 and 3, in advance of any activities that have the potential to disturb archaeological resources.

This list will be amended during TPAP.
Matters of Provincial Importance and Indigenous or Treaty Rights

A comprehensive plan for mitigation and monitoring will be developed during detail design, and prior to project implementation. This plan will be based on the recommendations provided in the technical reports to produce net positive effects on matters of provincial importance related to the natural environment, cultural heritage resources, hydrology, or constitutionally protected Indigenous or Treaty Rights. The plan will identify and address potential environmental impacts, approval and permit requirements, and monitoring processes to be completed during construction. The following list summarizes the matters that may be relevant in determining provincial importance:

- Constitutionally protected Indigenous or treaty rights;
- A park, conservation reserve or protected area (not applicable);
- Extirpated, endangered, threatened, or species of special concern and their habitat;
- A wetland, woodland, habitat of wildlife or other natural heritage area;
- An area of natural or scientific interest (earth or life science);
- A stream, creek, river or lake containing fish and their habitats;
- An area or region of surface water or groundwater or other important hydrological feature;
- Areas that may be impacted by a known or suspected on or off-site source of contamination such as a spill, a gasoline outlet, an open or closed landfill site, etc.;
- Protected heritage property;
- Built heritage resources;
- Cultural heritage landscapes;
- Archaeological resources and areas of potential archaeological interest;
- An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the Niagara Escarpment Planning and Development Act (not applicable);
- Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the Oak Ridges Moraine Conservation Act, 2001 applies (not applicable); and,
- Property within an area described as a key natural heritage feature or a key hydrologic feature in the Protected Countryside by the Greenbelt Plan under the Greenbelt Act, 2005 (not applicable).