



LONDON BIKES



City of London Cycling Master Plan

Final Executive Summary | September 2016



London
CANADA

MMM GROUP



London ON Bikes– London’s new cycling master plan – has been developed to respond to the need for an improved vision, infrastructure, programs, policies and actions. The plan is informed by best practices, lessons learned, current design guidelines and legislation and reflects the priorities and principles of city staff, stakeholders and residents who contributed to its development. London ON Bikes provides a blueprint for the future of the City’s cycling network, including key pathways, supportive programming as well as outlines a recommended investment and implementation strategy to 2031. In 2005, the City’s first cycling master plan was developed. In 2007, an implementation strategy was developed to continue the momentum and success. Almost 10 years has passed. Great progress has been made in improving cycling and pathway infrastructure, policies and programs in London since 2005, culminating in a bronze Bicycle Friendly Community award in 2009. The following is a summary of the key content found within the London ON Bikes Cycling Master Plan report.

EX.1 The Purpose

London ON Bikes is founded on three key principles – the **opportunity statement** (consistent with the Municipal Class Environmental Assessment requirements), the **vision** and supporting **objectives**. Each principle was shaped by input received from residents, stakeholders and interest groups through a comprehensive consultation and engagement program. They shaped the actions and recommendations and provide a common basis for future planning, design and development.

OPPORTUNITY

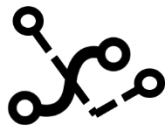
A comprehensive City-wide cycling network was developed that accommodates both commuter and recreational cyclists. The network was prioritized and identifies initial as well as long-term initiatives to facilitate implementation. The network is supported by policies, initiatives and strategies to guide coordination, facilitation, encouragement and education.

VISION

The culture of cycling within London is encouraged and achieved throughout the City by providing infrastructure which is considered comfortable, safe and convenient. The cycling routes and facilities provide connections to all mobility choices for all Londoners. Cycling is part of the City’s vision to grow as an age-friendly, sustainable City.



OBJECTIVES



Connectivity

Build on the existing system and identify improvements on and off-road.



Consistency

Provide consistent design guidance that builds on best practices.



Comfort

Provide facilities that are considered comfortable for various cyclists.



Maintenance

Recommend appropriate practices and level of service.



Prioritization

Prioritize network improvements for strategic implementation.



Promotion

Increase awareness and interest in cycling city-wide.



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EX.2 The Plan

The plan was developed using a four phase process. The approach is consistent with a Municipal Class Environmental Assessment (MCEA) Master Plan Approach #1. The approach requires that Phases 1 and 2 of the MCEA process be met – including two rounds of public / stakeholder consultation.

City of London residents expect to be involved in the planning process. They expect to be consulted and look for opportunities to provide their input. The consultation / engagement program used to inform the development of London ON Bikes was no different. The process used to develop London ON Bikes was informed by ongoing consultation and engagement through:

- **Formal Outreach:** in-person engagement with members of the public through public events and information centres and with stakeholders through meetings and workshops.
- **Informal Outreach:** Education on project objectives and promotion of opportunities for involvement such as project newsletters and promotional materials e.g. posters.
- **Online Engagement:** consultation activities hosted online – on the project website – which are interactive and reflect the questions asked through formal engagement.





London ON Bikes is made up of four key elements:

1. **The Proposed Network:** an interconnected system of on and off-road cycling facilities that provide cyclists of all ages and abilities with a range of routes and facility types to choose from.
2. **Policy Considerations:** A set of policy considerations and recommendations which are intended to be used as a guide as municipal policies are updated.
3. **Strategic Actions:** Proposed actions and strategies that support the Five E's of a bicycle friendly community including engineering, education, encouragement, enforcement and evaluation.
4. **An Implementation Strategy:** A proposed approach to guide the short, medium and long-term implementation of the cycling network and supportive policies and programs.

The implementation of all of these elements of this cohesive plan is needed in order for the long-term city-wide cycling vision and objectives to be realized. The following sections provide highlights from each of the core elements of the plan.

EX.3 The Network

The London ON Bikes network was developed using an iterative process which:

- Builds upon existing conditions and previously proposed routes / facility types (2005 Cycling Master Plan);
- Identifies route alternatives and a set of evaluation criteria which are used to evaluate the alternatives;
- Integrates public / stakeholder input; and
- Identifies proposed facility types using a process based on Ontario Traffic Manual Book 18 and other on and off-road facility design guidelines.

London's existing cycling network – made up of 330 kilometres of on and off-road cycling facilities – was the basis from which future routes were selected and recommended. London has a well-developed system made up of **in-boulevard pathways, the Thames Valley Parkway, pathways through parks, signed bicycle routes** (including sharrows) and **bike lanes**. These existing routes and facilities were investigated along with new links and alternatives.



When developing a connected and continuous system of cycling facilities it is important to compare and assess the route alternatives to a set of common criteria. Route selection criteria were identified early in the process and were reviewed and confirmed through the first round of consultation. The revised criteria built upon criteria identified in the 2005 Cycling Master Plan as well as other design guidelines. The criteria include **access and potential uses, connectivity and directness, environmental protection, attractiveness and aesthetics, safety and comfort, cost, consideration of future use, tourism and environmental sustainability**. More details about each of the criteria and the considerations which informed the alternatives assessment are found in **Technical Appendix E**. Using the existing conditions and route selection criteria as a base, a set of route alternatives were identified and investigated. The routes included:

- **Spine Routes:** north-south and east-west routes that link key destinations.
- **Local Neighbourhood Routes:** Routes on local neighbourhood roadways and through neighbourhood parks to connect to the spine routes.
- **Touring Routes:** links that provide access to rural areas of the city and surrounding municipalities.

The investigation included a comprehensive desk-top exercise and field work which was documented using GPS waypoints and photographs. The information gathered through this investigation combined with background data and information was assessed and used to select preferred routes. Key information that influenced the selection of preferred routes included:

- Existing Roadway Width;
- Traffic Volume & Speed;
- On-Street Parking;
- Scheduled capital projects for both the road and pathway network;
- Public / Stakeholder input; and
- On-going Planning Projects.

Once the routes were selected and reviewed with the public, a process to identify and select cycling facilities within and outside of the road right-of-way was developed. This process is based on the approach in Ontario Traffic Manual Book 18: Cycling Facilities as well as other best practices related to pathway route selection and design.





The process is made up of three steps for facilities found within and outside of the road right-of-way. The steps are similar but reflect the key differences related to each. **Figure 1** illustrates the process used to select cycling facilities.



Figure 1 – Facility Selection Process for London ON Bikes

The preferred route network and facility types are illustrated on **Maps EX1** and **EX2**. A summary of the total existing and proposed cycling network by facility type is presented in **Table 1**. Illustrations of the facility types noted in **Table 1** are presented in **Figure 2**. Coloured lines surrounding the illustration correspond to the colours used to illustrate the facility types on the network maps.



Table 1 – Existing & Proposed Facility Types for London ON Bikes (Full Build-out 15+ years)

| Facility Type | Existing (km) ¹ | Proposed (km) ¹ | Total (km) ¹ |
|---------------------------------|----------------------------|----------------------------|-------------------------|
| Shared Facilities | | | |
| Signed Bike Route | 50.8 | 157.9 | 208.7 |
| Signed Bike Route with Edgeline | 0 | 2.6 | 2.6 |
| Signed Bike Route with Sharrow | 10 | 23 | 33 |
| Designated Facilities | | | |
| Paved Shoulder | 0 | 81.6 | 81.6 |
| Bike Lane | 60 | 48.3 | 108.3 |
| Separated Facilities | | | |
| Buffered Bike Lane | 0 | 31.9 | 31.9 |
| Buffered Paved Shoulder | 0 | 10.7 | 10.7 |
| Cycle Track | 0 | 7.5 | 7.5 |
| In-Boulevard Multi-use Pathway | 42 | 28.2 | 70.2 |
| Multi-use Pathway | 166 | 78.7 | 244.7 |
| Total | 329 | 470 | 799 |

¹ On-road facilities are measured per roadway km. (i.e. includes bike lanes typically on both sides of the road). Pathways in-boulevard or in public open space are based on linear km off-road pathways (i.e. both directions share the same measurement in length).

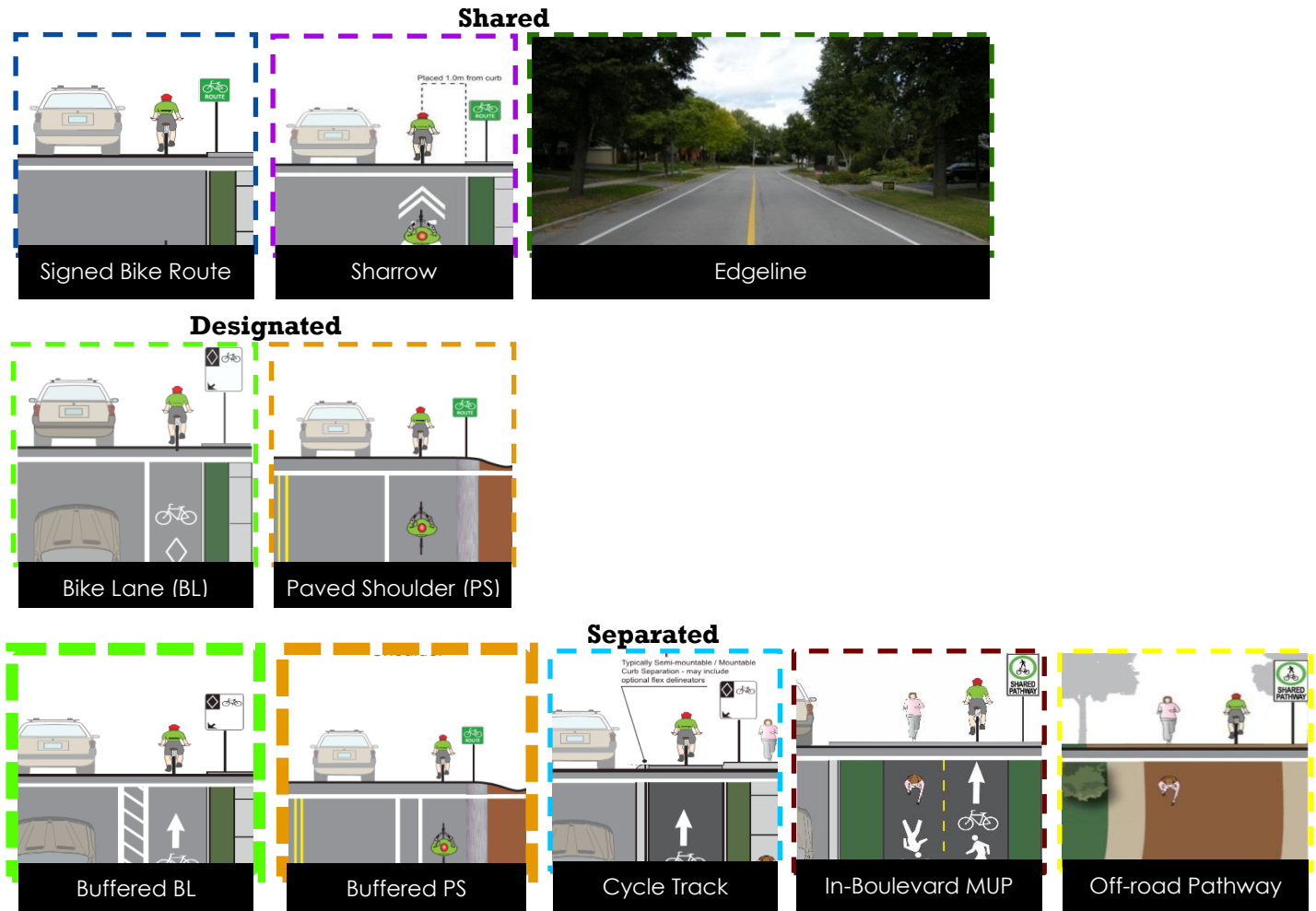


Figure 2 – Overview of Proposed Cycling Facility Types



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Map

EX-1

**City-wide Map
Proposed Cycling Network by
Proposed Detailed Facility Types**

Legend

Existing Cycling Routes

- Multi Use Pathway
- In-Boulevard Facility
- Bike Lane
- Signed Bike Route with Sharrow
- Signed Bike Route

Proposed Facility Types

- Multi-Use Pathway
- In-Boulevard Facility
- Cycle Track
- Buffered Bike Lane
- Bike Lane
- Buffered Paved Shoulder
- Paved Shoulder
- Signed Route with Edgeline
- Signed Bike Route with Sharrow
- Signed Bike Route
- Desired Connection¹

Key Destinations

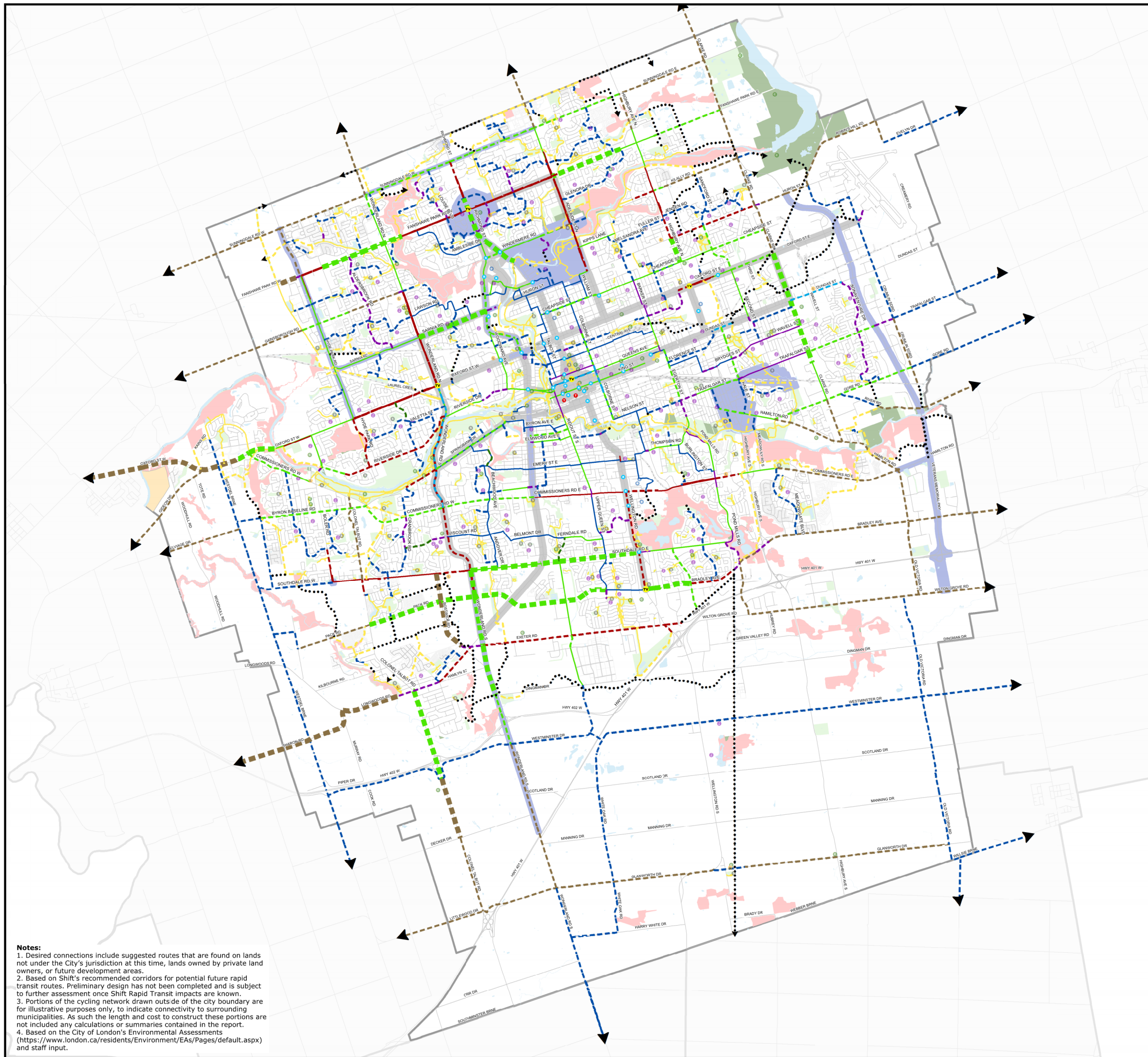
- Community Destination
- Potential Rapid Transit Station
- Hospital
- Public Library
- School
- Sport Facility
- Transit Hub
- Potential Transit Village

Other

- Road Network
- Railway
- Potential Future Rapid Transit Route²
- Future Development Lands
- Connection to Surrounding Municipality³
- Environmentally Significant Area
- Future / On-going / Completed Environmental Assessments (Study Area)⁴
- Park
- Conservation Authority Land
- Provincial Park
- Watercourse



Notes:
 1. Desired connections include suggested routes that are found on lands not under the City's jurisdiction at this time, lands owned by private land owners, or future development areas.
 2. Based on Shift's recommended corridors for potential future rapid transit routes. Preliminary design has not been completed and is subject to further assessment once Shift Rapid Transit impacts are known.
 3. Portions of the cycling network drawn outside of the city boundary are for illustrative purposes only, to indicate connectivity to surrounding municipalities. As such the length and cost to construct these portions are not included any calculations or summaries contained in the report.
 4. Based on the City of London's Environmental Assessments (<https://www.london.ca/residents/Environment/EAs/Pages/default.aspx>) and staff input.



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Map EX-2

**Central Area Map
Proposed Cycling Network by
Proposed Detailed Facility Types**

Legend

Existing Cycling Routes

- Multi Use Pathway
- In-Boulevard Facility
- Bike Lane
- Signed Bike Route with Sharrow
- Signed Bike Route

Proposed Facility Types

- Multi-Use Pathway
- In-Boulevard Facility
- Cycle Track
- Buffered Bike Lane
- Bike Lane
- Buffered Paved Shoulder
- Paved Shoulder
- Signed Route with Edgeline
- Signed Bike Route with Sharrow
- Signed Bike Route
- Desired Connection¹

Key Destinations

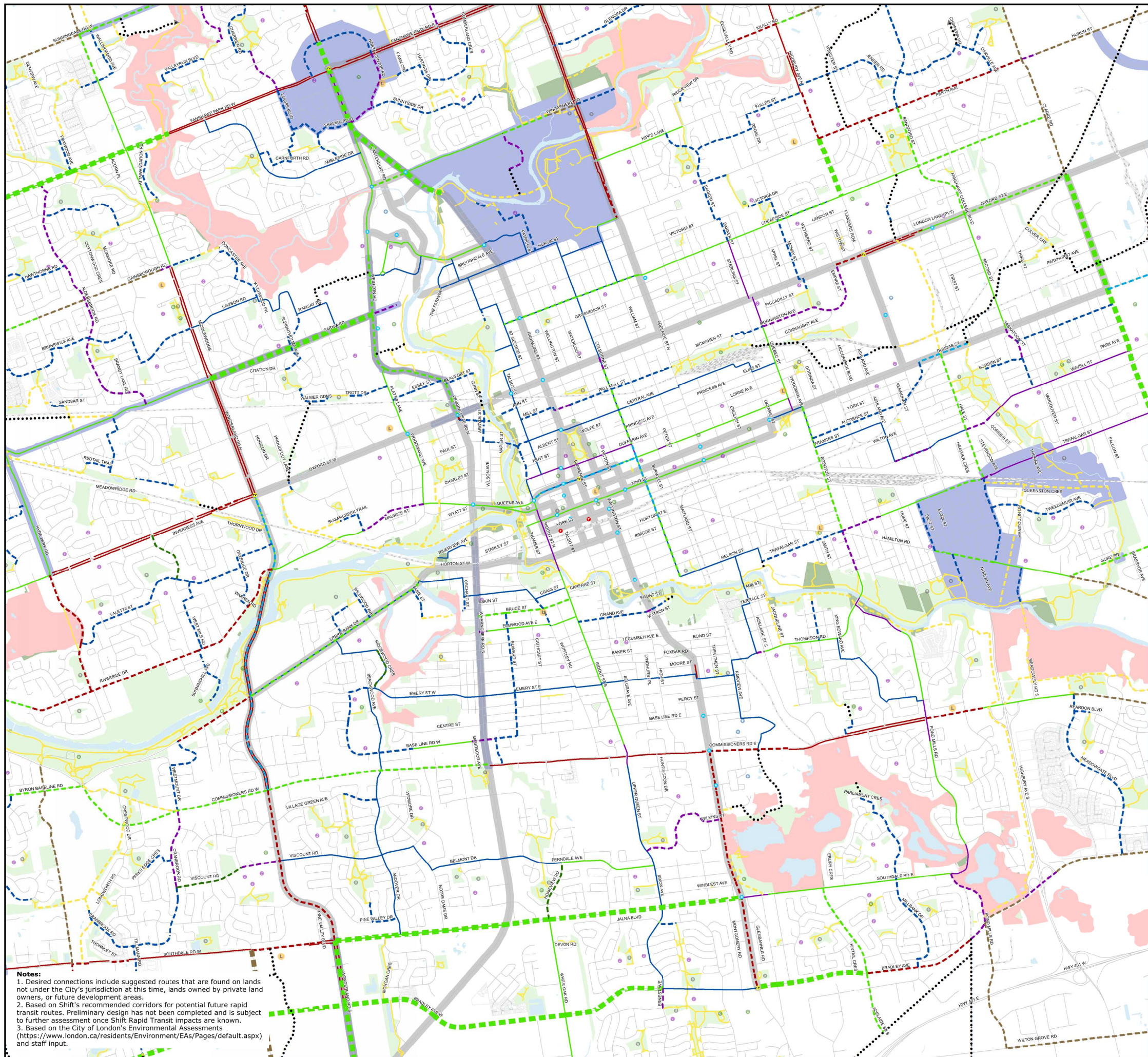
- Community Destination
- Potential Rapid Transit Station
- Hospital
- Public Library
- School
- Sport Facility
- Transit Hub
- Potential Transit Village

Other

- Road Network
- Railway
- Potential Future Rapid Transit Route²
- Future Development Lands
- Environmentally Significant Area
- Future / On-going / Completed Environmental Assessments (Study Area)³
- Park
- Conservation Authority Land
- Parcel Property
- Watercourse



0 0.5 1 2 Kilometres



Notes:
 1. Desired connections include suggested routes that are found on lands not under the City's jurisdiction at this time, lands owned by private land owners, or future development areas.
 2. Based on Shift's recommended corridors for potential future rapid transit routes. Preliminary design has not been completed and is subject to further assessment once Shift Rapid Transit impacts are known.
 3. Based on the City of London's Environmental Assessments (<https://www.london.ca/residents/Environment/EAs/Pages/default.aspx>) and staff input.



The design of cycling facilities should be based on the most current guidelines and best practices. A set of design guidelines were developed for London ON Bikes and are presented in **Technical Appendix G**. The guidelines were developed based on the following design guidelines and standards:

- Ontario Traffic Manual Book 18: Cycling Facilities ([here](#)).
- Ontario Traffic Manual Book 15: Pedestrian Crossing Treatments ([here](#)).
- Ministry of Transportation Ontario (MTO) Bikeways Design Guidelines .
- National Association of City Transportation Officials Urban Bikeways Design Guide and Urban Street Design Guide ([here](#)).
- American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities ([here](#)).
- Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads ([here](#)).
- Transportation Association of Canada (TAC) Bikeway Traffic Control Guideline for Canada ([here](#)).
- Accessibility for Ontarians with Disabilities Act – Built Environment Standards ([here](#)).

The guidelines are meant to be used as the London ON Bikes network is being implemented and should be updated as primary reference guidelines are reviewed and revised.

EX.4 The Policies & Action Plan

Six policy trends have been identified based on input received, discussions throughout the planning process and policy trends throughout Southern Ontario. The policy trends include:

- Cycling facilities related to **complete streets**;
- Cycling on **sidewalks**;
- Cycling infrastructure and **e-bikes**;
- **Risk management** and **liability**;
- Cycling and pathways in **new development areas**; and
- **Accessibility**.

For each of the policy areas, key considerations based on current best practices and trends are highlighted, the current context in London is noted, recommendations are identified and affected policies and plans are highlighted.



In addition to proposed policy considerations, a master plan requires actions and recommendations that address the five E's (Engineering, Education, Encouragement, Evaluation and Enforcement). Together the proposed network, policies and actions will help to establish the core objectives and desired outcomes of the plan. . There are a total of fourteen actions currently underway or being proposed to enhance and influence cycling throughout London.. An overview of the fourteen actions, their objectives and the "E's" that they support are presented in **Table 2**.



Table 2 – Overview of Current and Proposed Actions

| Action | Objective | Five E's Support |
|---|---|-----------------------------|
| 1: Wayfinding & Signage Strategy | To create a consistent visual identity in the form of a wayfinding and signage strategy to achieve connectivity between the on and off-road system and awareness of route alternatives. | Engineering & Encouragement |
| Status | Discussion and research in progress. | |
| 2: Winter Cycling Network | To provide cyclists with year-round commuter and recreational cycling opportunities which are considered comfortable, and to guide decision making related to maintenance. | Engineering & Encouragement |
| Status | In progress. To be discussed and further researched once the Minimum Maintenance Standard (MMS) has been updated and adopted. | |
| 3: Touring Loop | To provide residents and visitors (with a focus on novice / recreational cyclists) with opportunities to tour the city by bike. | Encouragement & Education |
| Status | Discussion and research in progress. | |
| 4: Bike Share | To identify a system of "for rent" bicycles located at key destinations providing residents and visitors with an opportunity to use a bike – on demand. | Encouragement |
| Status | Discussion and research in progress. | |
| 5: CAN-Bike Program | To educate residents – specifically youth – on how to safely and comfortably cycle throughout the city – on and off-road. | Education |
| Status | CANBike London already exists. Further expansion should continue to be examined. | |
| 6: Cycling Webpage | To establish an online "hub" of cycling specific information, to celebrate successes, continue the discussion, provide education materials and promote future opportunities. | Encouragement & Education |
| Status | Discussion and research in progress. Content of the London ON Bikes website could be used to develop a potential layout or content. | |




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| Action | Objective | Five E's Support |
|--------------------------------------|---|-----------------------------|
| 7: Local Cycling Destinations | To educate the public on specific locations throughout the city those are supportive of, and have cycling amenities. | Encouragement & Evaluation |
| Status | Discussion and research in progress. Additional consideration for signage concepts and details related to implementation to be considered. | |
| 8: Bicycle Parking | To provide cyclists with a variety of secure locations throughout the city where they can lock-up their bicycle. | Encouragement |
| Status | Discussion and research in progress. | |
| 9: Performance Measures | To establish a process and procedure to track and document successes and progress made as a result of the implementation of London ON Bikes. | Evaluation |
| Status | Discussions started. Research to be in 2016 and 2017 to explore the development and implementation of performance and monitoring measures. | |
| 10: Cycling Crossings | To provide design direction on potential locations where crossings need to be enhanced to safely accommodate cyclists. | Evaluation & Engineering |
| Status | Consideration and coordination with the City's capital program is planned. Further discussions are needed. | |
| 11: Enforcement | To increase relationships with the London Police Service to improve enforcement and safe cycling practices. | Enforcement & Education |
| Status | Discussions and research in progress. | |
| 12: Events | Work with local partners including but not limited to technical agencies, interest groups, businesses and public representatives to celebrate the cycling related successes achieved within the City of London. | Encouragement & Education |
| Status | Past events completed by the City. Future events to be planned and coordinated. | |
| 13: Integrate with Transit | To encourage residents and visitors of London to integrate cycling into day to day activities including transit and walking to achieve multi-modal trips. | Engineering & Encouragement |
| Status | All City departments coordinating through the planning, design and implementation of the Shift network and London ON Bikes network. | |
| 14: Update Municipal Policies | To ensure that Municipal policies are aligned with consistent messaging related to the planning, development and promotion of cycling as a viable mode of transportation and recreation. | Encouragement |





| Action | Objective | Five E's Support |
|--------|---|------------------|
| Status | Policies should continue to be updated consistent with current schedules and should reflect the policy suggestions and other cycling and sustainable transportation considerations outlined within London ON Bikes as well as emerging trends identified through Provincial policies. | |

Detailed workplans (e.g., where additional feasibility studies are required such as a Bike Share Program) and/or changes to implementation plans (e.g., identifying & enhancing local cycling destinations) will occur as part of the annual cycling program. Municipal Council approved a 10 year funding program using Federal Gas Tax (see section 4.4.2) that will assist with these strategic actions.

EX.5 The Implementation Strategy

Successful implementation requires a clear strategy and a set of tools. London ON Bikes is intended to be implemented over a 15+ year timeline. It focuses on the short-term (0 - 5 years) and medium-term (6 – 15 years) horizons. **Maps EX3** and **EX4** illustrate the proposed cycling routes identified for implementation within these two phases. An overview of the facility types proposed within these phases is presented in **Table 3**.

Table 3 – Proposed Facility Types in the Short and Medium-term

| Phase | Facility Types (Roadway / Pathway km) | | | | | | | | | | |
|------------------------------|---------------------------------------|-------------------|----------|-----------|----------------|-----------|--------------------|-------------------------|-------------|----------------------|------------------|
| | Total | Signed Bike Route | Edgeline | Sharrow | Paved Shoulder | Bike Lane | Buffered Bike Lane | Buffered Paved Shoulder | Cycle Track | In-Boulevard Pathway | Off-road Pathway |
| Existing | 331 | 51 | 0 | 10 | 0 | 60 | 0 | 0 | 0 | 42 | 166 |
| Short (0 – 5 years) | 94 | 15 | 1 | 3 | 11 | 17 | 12 | 4 | 2 | 3 | 26 |
| Medium (6 – 15 years) | 212 | 99 | 2 | 15 | 30 | 14 | 12 | 3 | 3 | 16 | 22 |
| Total | 637 | 165 | 3 | 28 | 41 | 91 | 24 | 7 | 5 | 61 | 214 |

All other proposed routes are intended to be implemented within the long-term horizon 15+ years unless opportunities such as a road reconstruction project arise that would enable a cost-effective implementation. Routes beyond the 15 year short and medium-term phases have not been costed in the London ON Bikes master plan. It is recommended that the master plan be reviewed and updated every 5 to 10 years.



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Map

EX-3

**City-wide Map
Proposed Short Term &
Medium Term Phasing**

Legend

Existing Cycling Routes

- Multi Use Pathway
- In-Boulevard Facility
- Bike Lane
- Signed Bike Route with Sharrow
- Signed Bike Route

Proposed Phasing

- Short Term (0-5 Years)
- Medium Term (6-15 Years)

Key Destinations

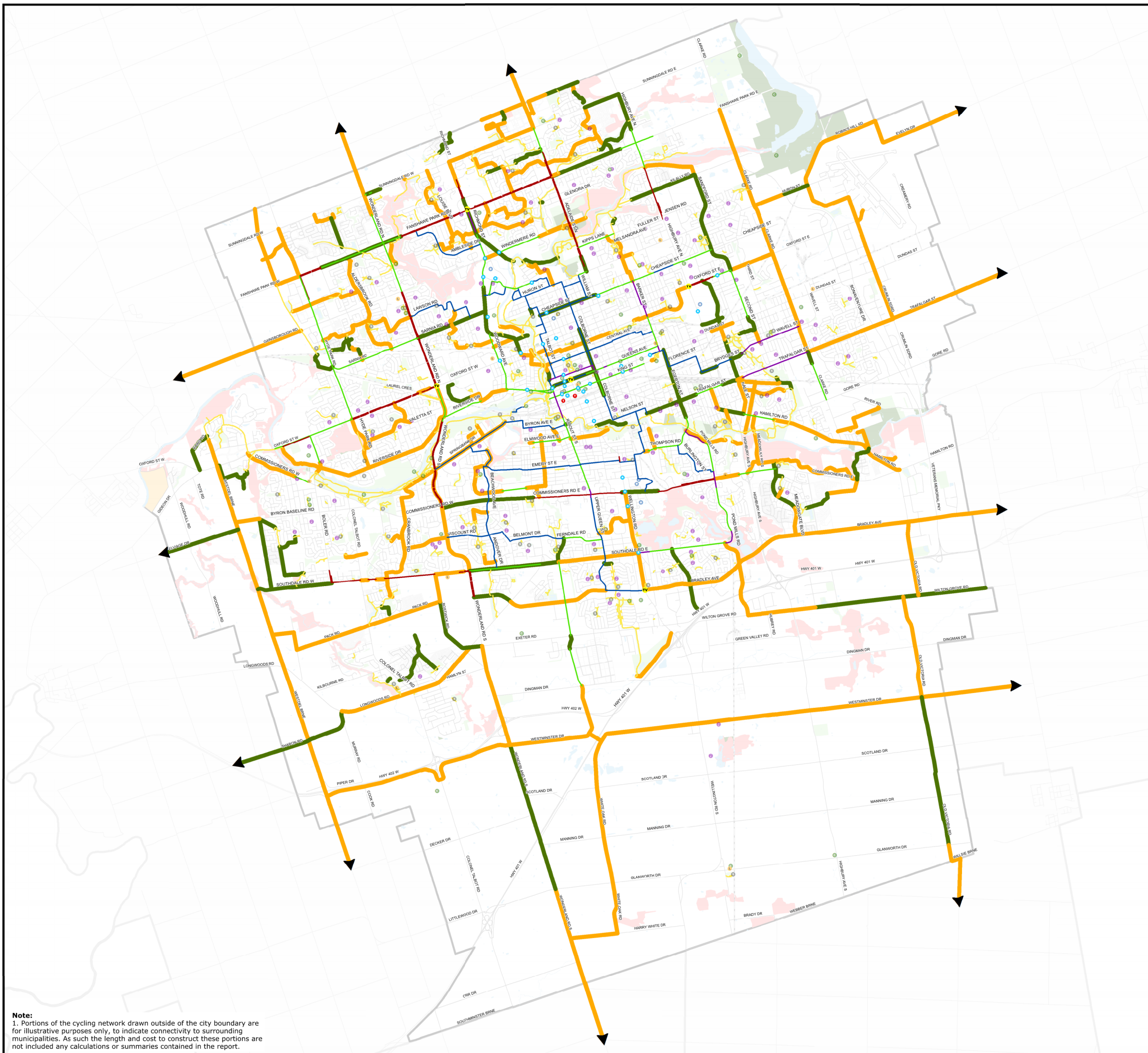
- Community Destination
- Potential Rapid Transit Station
- Hospital
- Public Library
- School
- Sport Facility
- Transit Hub
- Potential Transit Village

Other

- Road Network
- Railway
- Future Development Lands
- Connection to Surrounding Municipality¹
- Environmentally Significant Area
- Park
- Conservation Authority Land
- Provincial Park
- Watercourse



Note:
1. Portions of the cycling network drawn outside of the city boundary are for illustrative purposes only, to indicate connectivity to surrounding municipalities. As such the length and cost to construct these portions are not included any calculations or summaries contained in the report.



City of London Cycling Master Plan Update

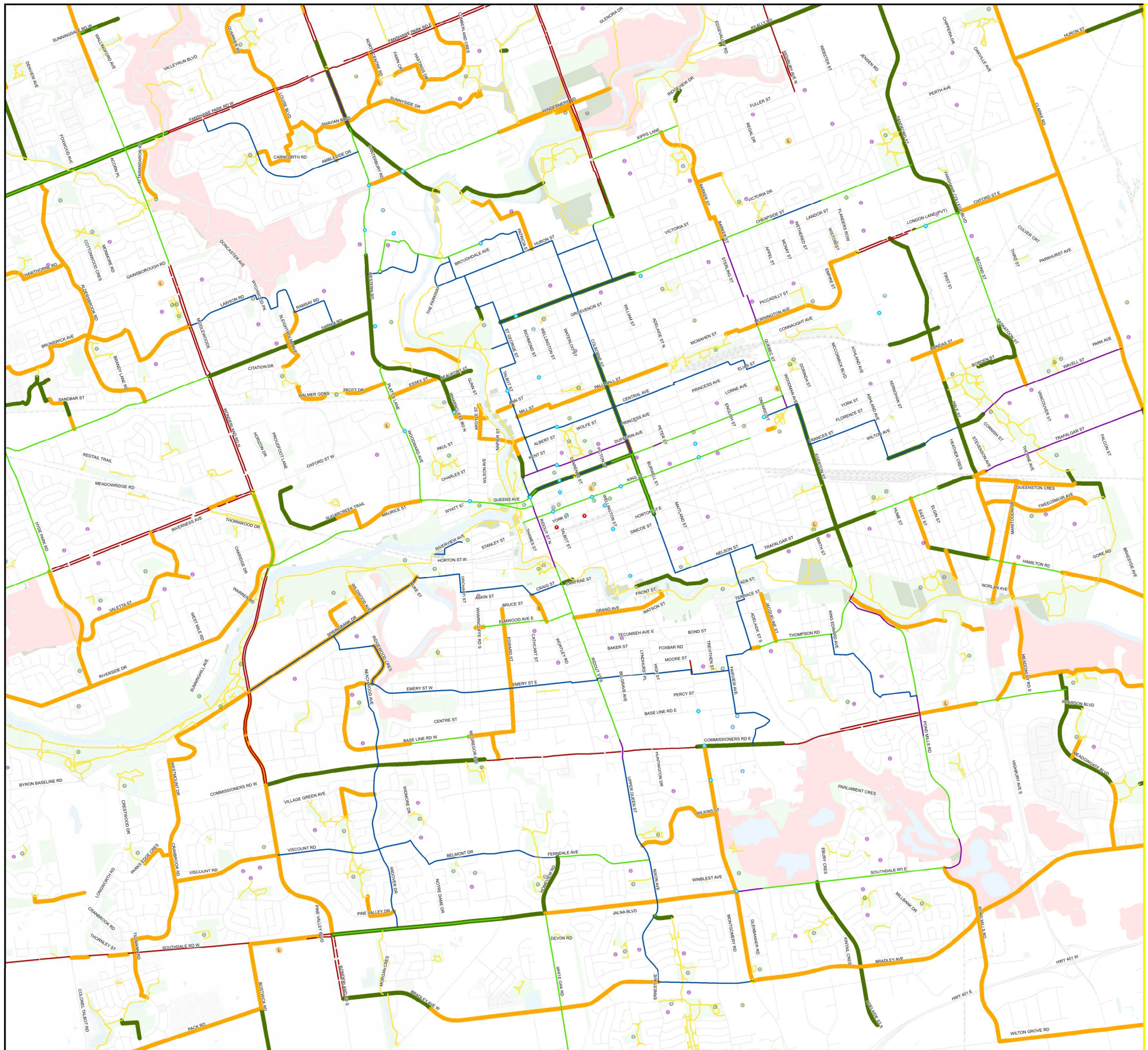
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Map EX-4

Central Area Map Proposed Short Term & Medium Term Phasing

Legend

- Existing Cycling Routes**
 - Multi Use Pathway
 - In-Boulevard Facility
 - Bike Lane
 - Signed Bike Route with Sharrow
 - Signed Bike Route
- Proposed Phasing**
 - Short Term (0-5 Years)
 - Medium Term (6-15 Years)
- Key Destinations**
 - Community Destination
 - Potential Rapid Transit Station
 - Hospital
 - Public Library
 - School
 - Sport Facility
 - Transit Hub
 - Potential Transit Village
- Other**
 - Road Network
 - Railway
 - Future Development Lands
 - Environmentally Significant Area
 - Park
 - Conservation Authority Land
 - Watercourse





Though a proposed phasing strategy has been identified, like the master plan, it is meant to be a flexible tool which can be adapted should additional routes be identified or if implementation is deferred or expedited. A five step process was used to review and select the appropriate phasing for the proposed routes that makeup the cycling network. The process took into consideration three key pieces of input:

- **Public / stakeholder comments:** including input received from the second public information centre – where attendees were asked to highlight their top three priority routes – as well as input from the Cycling Advisory Committee and other local stakeholders.
- **Capital plans and priorities:** cycling routes have been identified in a number of key Council approved planning and implementation documents including the 4 – year capital budget, planned infrastructure renewal list, Smart Moves, Parks & Recreation Master Plan, among others.
- **Network objectives:** overarching objectives established early in the process such as connectivity and continuity, overcoming key barriers, prioritization of separated infrastructure, north-south and east-west connections and major loop routes.

Implementation is meant to be supported by a set of tools that will help to guide future decision making, planning, design and implementation. There are a number of tools identified in **section 4.0** of London ON Bikes including:

- Defined roles and responsibilities for those who will be involved in the implementation of the plan;
- A decision making process which builds on the process defined in the 2005 Master Plan and has been updated based on recently adopted guidelines;
- Defined next steps based on the Municipal Class EA process; and
- Operations and maintenance considerations and references.

A plan of this scale will require annual investments. The benefits of implementing a comprehensive city-wide cycling network on an annual basis and where possible with larger capital projects will maintain momentum and achieve cost efficiencies.



Network costs developed for London ON bikes are intended to be used for initial budgeting purposes. The cost of implementation has been categorized as **funded** and **unfunded** projects. An overview of the cost to implement London ON Bikes is presented in **Table 4**.

Table 4 – Overview of Proposed Costing for London ON Bikes

| | Short-term (0 – 5 years) | Medium-term (6 – 15 years) | Short + Medium Term (total) |
|--|-----------------------------|-------------------------------|--------------------------------|
| Within the Road Right-of-Way | \$9,905,000 | \$20,013,000 | \$29,918,000 |
| Outside of the Road Right-of-Way | \$13,406,000 | \$9,873,500 | \$23,279,500 |
| Total | \$23,300,000 | \$29,887,000 | \$53,198,000 |
| Cost Rationalization | | | |
| Funded Projects | \$19,839,000 | \$14,688,000 | \$34,527,000 |
| Unfunded Projects | \$3,472,000 | \$15,199,000 | \$18,671,000 |
| Cost Per Year (unfunded projects) | \$694,000 | \$1,519,900 | N/A |
| Annual Cost per Resident (381,000 - 2016) to address unfunded projects | \$1.82 | \$3.99 | N/A |

Approximately \$34.5 million of the total estimated cost has already been allocated for through approved major road projects, monies made available for cycling specific infrastructure. Approximately \$18.6 million of the total cost is currently unfunded which will require additional consideration regarding funding options. This equates to \$1.82 per person, per year during the first five years, and \$3.99 per person per year over the course of 10 years (medium term).

EX.5.1 Additional Implementation Considerations

Implementation not only refers to the proposed routes and facility types (i.e. the cycling network) but must also take into consideration the cost of supporting assets such as bike parking, bike lockups, cycling destination infrastructure, roadway wayfinding signage, potential partnership investment in a bikeshare program, etc. These types of supportive programs / initiatives are in the process of being researched and discussed by City staff and have also been identified as some of the key actions (EX.4) to achieve the London ON Bikes vision and objectives. During the 2016 – 2019 multi-use budget deliberations, Municipal Council approved a 10 year capital program valued at \$2.85 million with projected expenditures of \$150,000 in 2016 and \$300,000 per year from 2017 to 2025 using the Federal Gas tax as the funding source.





In addition to supportive amenities, as the routes and facilities that make up the cycling network are implemented, improved operations and maintenance are needed. Costs associated with the operation and maintenance of cycling facilities are necessary to provide a quality user-experience, encourage repeat use, and maximize the return on the capital investments. Operational costs can vary depending on the type of cycling facility and level of service. Operation and maintenance of roadways and pathways pertains to seasonal practices such as sweeping in the summer and ploughing and salting in the winter. London currently uses the Minimum Maintenance Standards as a guide for on-road route operations and maintenance. Operation and maintenance of the off-road system is addressed on a case by case basis. Operations and maintenance of both systems are dependent on available budget, the available tools and staff capacity. Estimated annual costs for the maintenance of the cycling network during non-winter seasons – informed by best practices from comparable municipalities – are presented in **Table 5**. The information is meant to be used as references until the Minimum Maintenance Standards (MMS) is updated and adopted.

Table 5 – Annual Maintenance Costs for Existing and Proposed Facility Types during Non-Winter Seasons (pavement marking renewals, sweeping, etc.)

| Facility Type | Existing (km) | Proposed (km) | Total (km) ¹ | Per km Cost (per year) | Estimated Cost (per year) |
|-----------------------------------|---------------|---------------|-------------------------|------------------------|----------------------------------|
| Signed Bike Route | 50.8 | 157.9 | 208.7 | \$260 | \$54,000 |
| Signed Bike Route with Edgeline | 0 | 2.6 | 2.6 | \$6,260 - \$7,660 | \$16,000 - \$20,000 |
| Signed Bike Route with Sharrow | 10 | 23 | 33 | \$2,950 - \$6,410 | \$97,350 - \$211,530 |
| Paved Shoulder | 0 | 81.6 | 81.6 | \$6,260 - \$7,660 | \$510,820 - \$625,050 |
| Bike Lane | 60 | 48.3 | 108.3 | \$6,650 - \$8,050 | \$721,000 - \$871,820 |
| Buffered Bike Lane (Hatched) | 0 | 31.9 | 31.9 | \$8,050 - \$9,650 | \$256,800 - \$307,840 |
| Buffered Paved Shoulder (Hatched) | 0 | 10.7 | 10.7 | \$7,660 - \$9,260 | \$82,000 - \$99,000 |
| Cycle Track | 0 | 7.5 | 7.5 | \$6,650 - \$8,050 | \$50,000 - \$60,380 |
| In-Boulevard Multi-use Pathway | 42 | 28.2 | 70.2 | \$1,685 - \$2,310 | \$118,000 - \$162,000 |
| Multi-use Pathway | 166 | 78 | 244.7 | \$1,685 - \$2,310 | \$412,320 - \$565,260 |
| Total | | | | | \$2,318,300 - \$2,977,000 |

1. See Section 4.3.3 in the London ON Bikes master plan report for cost assumptions



Table 6 below summarizes an estimated annual maintenance cost by facility type for the proposed winter cycling network.

Table 6 – Annual Maintenance Costs for Winter Cycling Network

| Facility Type | Existing (km) | Proposed (km) | Total (km) ¹ | Per km Cost (per year) | Estimated Cost (per year) |
|---------------------------------|---------------|---------------|-------------------------|------------------------|------------------------------|
| Signed Bike Route | 15.1 | 1.3 | 16.4 | - | - |
| Signed Bike Route with Edgeline | - | 0.7 | 0.7 | \$1,000 | \$700 |
| Signed Bike Route with Sharrow | 5.8 | 3.2 | 9.0 | - | - |
| Bike Lane | 33.7 | 9.4 | 43.1 | \$1,000 | \$43,000 |
| Buffered Bike Lane | - | 8.3 | 8.3 | \$1,000 | \$8,000 |
| Cycle Track | - | 5.6 | 5.6 | \$13,500 - \$25,000 | \$76,000 - \$140,000 |
| In-Boulevard Multi-use Pathway | 19.3 | 3.9 | 23.3 | \$6,750 - \$12,500 | \$157,000 - \$291,000 |
| Total | | | | | \$285,000 - \$483,000 |

The City will review the annual year-round maintenance costs including the winter network, based on an approved level of service strategy and data collected from field operations.

EX.5.2 How will the Plan be Funded?

Understanding that additional funds will be required to achieve the implementation of all recommendations identified in the plan, there are three potential sources which could be explored to help fund the proposed projects / initiatives:

- **Economies of Scale:** coordination with large scale infrastructure projects so that cycling facilities are implemented at the same time as road reconstruction, utility projects such as water mains to reduce the burden of cost.
- **Annual Monies Allocated:** Budgets have been determined by City Council to facilitate the implementation of both the Cycling network as well as the proposed actions. In addition, Council has identified opportunities to allocate monies to future infrastructure maintenance.





- **External Funding Sources:** External funding options at the provincial and federal level such as the federal / provincial gas tax, Ontario Municipal Cycling Infrastructure Program, green municipal fund, infrastructure stimulus program, etc.
- **Partnerships:** Establishing new or enhancing existing public-public or public-private partnerships to identify opportunities to partner on implementation.

EX.6 Summary of Recommendations

Recommendations are identified throughout the body of London ON Bikes. **Table 7** summarizes the 36 recommendations found throughout the plan. It is important to note that the City has already begun action on a number of the recommendations noted below. London ON Bikes is meant to be used as a supporting document to reinforce the work being completed and to continue with the necessary changes being made.

Table 7 – Summary of London ON Bikes Recommendations

| # | Recommendations |
|---|---|
| 1 | The proposed cycling network illustrated on Maps EX-1 and EX-2 is to be adopted as the guide for the implementation of cycling infrastructure in London. |
| 2 | As the network changes over time, the mapping and corresponding GIS database should be updated to reflect the most up to date cycling conditions / routes. |
| 3 | OTM Book 18 and the other design guidelines / standards identified in this plan should be used as primary references when designing the cycling network in conjunction with existing pathway design guidelines prepared. |
| 4 | The information contained within Technical Appendix G is to be used as a guide when designing cycling facilities, developing communication materials or updating other municipal guidelines. |
| 5 | The policy considerations and recommendations should be reviewed and, where appropriate, should be integrated into Municipal policies. The policies and plans affected by London ON Bikes noted for each of the policy considerations should be reviewed by staff coordinating the implementation of the cycling master plan when it comes time for future updates or revisions to be made. |



| # | Recommendations |
|----|---|
| 6 | In principle and based on the Planning Act, municipal policies should be updated on a regular basis – every 5 – 10 years to ensure that they remain consistent and reflective of current trends and practices. |
| 7 | Review the 13 proposed strategic actions recommended within section 3.2 and consider them as new programs or initiatives are to be implemented by the City in coordination with various community partners. |
| 8 | Review and confirm a preferred signage strategy and wayfinding concept and work with local partners to implement signage along key cycling routes including gaps / missing linkages as they are implemented. |
| 9 | Review and discuss the adoption and maintenance of a winter cycling network. In the early stages of implementation the City should prioritize existing routes that provide connections to the downtown core. |
| 10 | Continue to explore the opportunity of recreational cycling touring loops. The updated loop routes – now consistent with the London ON Bikes network – should be reviewed and confirmed. |
| 11 | Should the touring loops be confirmed, a range of promotional tools such as route guides, signage, online interactive mapping, etc. should be explored. |
| 12 | Continue to explore and develop a business case for a city-wide Bike-Share Program suitable for London based on best practices from municipalities of similar scopes and scales. |
| 13 | Work with Middlesex-London Health Unit, school boards and other supporters of CAN-BIKE London to explore the possibility of implementing a permanent CAN-BIKE program in schools throughout the city, building on the existing program. |
| 14 | Building on the existing information found on the city website and the project specific website developed for London ON Bikes a dynamic online Cycling Hub should be developed. |





| # | Recommendations |
|----|--|
| 15 | Continue to identify opportunities to enhance and promote cycling destinations throughout the city including but not limited to park spaces, major tourism points (e.g. Covent Garden Market and Western Fair District, etc.) |
| 16 | Continue to implement bicycle parking with a focus on implementing bike corrals within the downtown core and stylized bike racks in various neighbourhoods throughout the City. |
| 17 | The proposed performance measures should be reviewed, confirmed and used to monitor the implementation and success of London ON Bikes. |
| 18 | The proposed crossing improvements should be identified and additional considerations for potential projects should be explored for both off-road pathway crossings and intersection improvements. |
| 19 | London Police Service should consider enhancing their cycling program including investments in additional bicycles for patrol. – clearly define allocations of monies and specifics of the total # recommended |
| 20 | The City of London should establish a budget and program to celebrate local cycling successes including but not limited to “opening” events for new infrastructure or amenities. |
| 21 | The City of London should work with local stakeholders and media to increase the profile of cycling at local events. |
| 22 | The City should continue to coordinate the implementation of rapid transit routes with cycling routes. When designing rapid transit routes cycling facilities should be integrated where possible or direct connections to the transit routes should be prioritized. |
| 23 | Transit hubs and stops should be designed with cycling in mind. Where possible, cycling amenities such as bicycle parking and fix-it stations along with encouragement materials should be provided. |
| 24 | The City of London should continue to review and update municipal policies to reflect the policy considerations noted in section 2.0 as well as emerging trends at the provincial and municipal level. |



| # | Recommendations |
|----|---|
| 25 | The proposed phasing plan identified for London ON Bikes should be adopted. The focus should be placed on implementing those priorities identified within the short and medium-term horizon. |
| 26 | The proposed facility mapping should be considered when updating other supportive policies such as the Official Plan, Transportation Master Plan and Parks and Recreation Master Plan. |
| 27 | The implementation tools identified in the cycling master plan should be used as an internal guide for City staff to facilitate the implementation of the London ON Bikes network as well as supportive programs and initiatives. |
| 28 | The KMZ (GoogleEarth™) database should be considered as a potential communication tool and to better understand some of the current conditions of proposed routes. |
| 29 | Periodically review the potential partners and the opportunities for partnership identified in Table 7. |
| 30 | City staff from various divisions and service areas should continue to work together to coordinate the implementation of London ON Bikes. A point person from each service area should be identified to track progress made and next steps as required. |
| 31 | Identify opportunities for the involvement of other municipal service area staff – based on further investigation of potential roles and responsibilities. |
| 32 | Utilize the updated decision making process to inform how the master plan is implemented and how additional routes are planned, designed and constructed. |
| 33 | As a project moves forward to implementation City staff should investigate the environmental impacts and determine the appropriate schedule to determine next steps. |
| 34 | The City should develop level of service standards for the maintenance and operations of cycling facilities based on the updated Minimum Maintenance Standards. |





| # | Recommendations |
|----|--|
| 35 | The City should identify London specific maintenance and operation practices for specific facility type such as in-boulevard facilities and cycle tracks. As new facilities are implemented, the City should consider whether the current maintenance practices address them appropriately. |
| 36 | The City should review and consider developing a standardized method of reporting, documenting and addressing concerns related to cycling maintenance and operation. The City should explore both online and manual reporting mechanisms. The results should be reported to Council and the public on an annual basis. |
| 37 | The unit costs spreadsheet should be used as a tool to inform future budgeting and costing for the on-road system of facilities. For the off-road system, previously developed guidelines and costing should be used. |
| 38 | When determining annual budgets, costs for facility maintenance and cycling programs / education should also be considered and budgeted. |
| 39 | Continue to identify projects which can be funded by existing programs established by various service areas within the city (i.e. lifecycle renewal projects). |
| 40 | Explore external funding sources and partnerships to help fund the proposed "enhancements" as well as other programs and promotional initiatives. |
| 41 | Continue to identify opportunities to coordinate large-scale capital projects to achieve economies of scale and build the costs for cycling facilities into those budgets. |

