



Report to: Development Services Committee

Meeting Date: December 11, 2023

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<b>SUBJECT:</b>	Elgin Mills Road, Schedule C Municipal Class Environmental Assessment (EA) Study (Wards 2, 5 and 6)
<b>PREPARED BY:</b>	Marina Riad, Engineer, Capital Works
<b>REVIEWED BY:</b>	Salia Kalali, Manager, Infrastructure and Capital Works Alain Cachola, Senior Manager, Infrastructure and Capital Works

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**RECOMMENDATION:**

- 1) That the report entitled “Elgin Mills Road, Schedule C Municipal Class Environmental Assessment (EA) Study (Wards 2, 5 and 6)”, be received; and,
- 2) That the preferred alignment and design concept of Elgin Mills Road from Woodbine Avenue to McCowan Road, as set out in the Environmental Study Report (ESR), be endorsed; and,
- 3) That City staff be authorized to issue a Notice of Study Completion and file the Schedule C Municipal Class EA Study for Elgin Mills Road with the Ministry of the Environment, Conservation and Parks (MECP); and,
- 4) That as per the feedback received at the Development Services Committee on November 14, 2023, City staff undertake further evaluation of the Active Transportation during the detailed design stage and endeavor to accommodate separated cycling and pedestrian facilities where possible along Elgin Mills Road; and further,
- 5) That staff be authorized and directed to do all things necessary to give effect to this resolution.

**PURPOSE:**

The purpose of this report is to seek Council’s endorsement of the preferred alignment and design concept, as set out in the Environmental Study Report (ESR), for Elgin Mills Road from Woodbine Avenue to McCowan Road and also authorization to file the Schedule C Municipal Class EA Study with MECP.

**BACKGROUND:**

Elgin Mills Road from Woodbine Avenue to McCowan Road is an existing City of Markham collector road that is approximately 6.8 km in length with a 20.0m right-of-way. This section of road includes the Hamlet of Victoria Square and is within the Markham’s Future Urban Area (FUA), as illustrated in **Attachment A**.

In May 2018, Council requested York Region to assume Elgin Mills Road between Victoria Square Boulevard and York-Durham Line into the York Region Road system. However, at that time York Region had advised Markham staff that the Elgin Mills Road widening could only be accommodated in the later part of their 10-year capital program.

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The Region added that there are priority projects within York Region included in their 10-year capital program that had already been approved. As York Region's timeline would not be able to meet the future growth demands in the area, Markham staff prepared a report to Development Services Committee in June 2019 titled "*Elgin Mills Road Municipal Class Environmental Assessment (Wards 2, 5 and 6)*" and received approval to undertake the Elgin Mills Road EA, design and construction, before transferring Elgin Mills Road to York Region.

#### Improving and Widening Elgin Mills Road

The purpose of the Schedule C Municipal Class EA study is to improve and widen the existing section of Elgin Mills Road to accommodate future growth in the area. The study will also address short-term and long-term transportation needs for pedestrians, cyclists, transit users, and motorists.

The City retained Arcadis IBI Group in October 2019 to carry out this study that included the following scope of work:

- Review existing conditions and future transportation needs along Elgin Mills Road corridor and identify opportunities for improvements;
- Identify, evaluate, and select alternative solutions and preferred design concepts to address the transportation, environmental, and social economic needs;
- Collect, document, and assess input and feedback from residents and stakeholders; and
- Document the decision-making rationale and study process in an ESR.

The study included a review of information from the City of Markham's FUA Conceptual Master Plan and York Region's Transportation Master Plan. A preferred alignment alternative and design concept for Elgin Mills Road between Woodbine Avenue and McCowan would be recommended by ensuring:

- Alignment with policies and planning documents;
- Minimizing impacts to the natural, social and economic environment;
- Extensive public consultation with all stakeholders; and
- Review of traffic data

#### Public Information Centres and other Consultation Were Held

The study has followed the public and stakeholder consultation process requirements as set out by Municipal Engineers Association (MEA) for Municipal Class EA. This consultation process involved the publishing of a Notice of Project Commencement, Public Information Centers (PIC) in March 2021 and November 2021, correspondence with reviewing agencies and meetings with significant stakeholders such as York Region, impacted property owners, multiple developers within the FUA, and Indigenous Communities.

The display boards for the PICs identified the different alignment alternatives and design concept that were evaluated within an evaluation matrix. The recommended alternative was displayed such that any concerns over the alignment could be submitted to the City to consider and address.

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The comments from the PIC meetings were taken into consideration and incorporated into the Schedule C Municipal Class EA process as outlined in the ESR.

**OPTIONS/ DISCUSSION:**

The ESR discusses the preferred alignment and design concept for Elgin Mills Road from Woodbine Avenue to McCowan Road.

Evaluation of Alternatives:

Due to the length of the corridor within the study area and its diverse characteristics, the evaluation criteria split the corridor into following distinct groups:

- General Design Approach
- Areas of Special Consideration
- Creek Crossings

A detailed list of evaluation criteria is shown in **Attachment B**.

Multiple iterations of design concepts were developed through consultation with the stakeholders which resulted in a preferred design concept for each of the distinct groups. There are a total of 14 evaluation criteria used in the study. The following three evaluation criteria have been identified as the critical items for the study.

1. Preferred Cross-Section:

For the cross section of Elgin Mills Road, an evaluation matrix comparing a rural cross section versus an urban cross section was evaluated. An urban cross section was chosen as the preferred design solution. **Attachment C** illustrates the full evaluation matrix for the preferred cross section of Elgin Mills Road.

2. Preferred Road Widening Approach:

Similarly, an evaluation of three different design concept was conducted for the preferred general road widening approach:

- symmetrical widening,
- asymmetrical widening to the south
- asymmetrical widening to the north

The symmetrical widening was the recommended design concept as demonstrated in **Attachment D**.

3. Preferred Active Transportation Facility:

Four alternatives were evaluated for active transportation facilities, namely:

- uni-directional bike lanes (on road bike lane) and sidewalk
- bi-directional cycle track (off road) and sidewalk
- uni-directional cycle track (off road) and sidewalk
- multi-use path (off road)

The four different alternatives are demonstrated in **Attachment E**. The recommended design concept to implement multi-use path on both sides of Elgin Mills Road as shown in **Attachment F** was presented at the Development Services Committee (DSC) meeting

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on November 14, 2023. As per the feedback received from the DSC members and to address safety concerns associated with future use of the Active Transportation facility by electric mobility devices, staff will include a commitment in the EA report to undertake further analysis of Active Transportation facilities during the detail design. Staff will investigate and endeavor to accommodate a uni-directional cycle track and sidewalk along each side of the Elgin Mills Road alignment, where possible.

The preferred design concept has been evaluated under the following key elements:

- **Natural Environment** – having regard for protecting the natural and physical components of the environment (e.g., air, land, water and biota) including natural areas.
- **Social-Cultural Environment** – having regard for properties, community character, community features, historical/archaeological remains, and cultural heritage features.
- **Transportation Service** – having regard for the technical suitability/longevity and other engineering aspects associated with the alternative solutions. Elgin Mills Road between Woodbine Avenue and Victoria Square Boulevard is currently serviced by York Region Transit only. The preferred design concept will support the expansion of YRT vehicles east to McCowan Road.
- **Infrastructure Design** - having regard for the technical design suitability and other engineering aspects associated with the alternative designs.
- **Cost Effectiveness** – having regard for the cost implicating items associated with the alternative solutions.

#### **OPERATIONS AND MAINTENANCE:**

With the direction provided by DSC members to change the Active Transportation facility from Multi-use Pathway (MUP) to separate cycle tracks and sidewalks, it is expected that the Operations and Maintenance (O&M) cost will significantly increase.

#### **Recommended Winter Maintenance Level of Service for City Cycle Tracks**

In light of the recommendations in the Ontario Traffic Manual (OTM) Guidelines to provide winter maintenance to cycle tracks and to maintain consistency with the maintenance level of service for Elgin Mills Road with cycle tracks in other Ontario municipalities, the Cycle Track is expected to be maintained to the same level of service as the roadway, year-round including during winter months.

Elgin Mills Road with a posted speed of 60 km/hour is classified as a Class 3 highway. According to the Minimum Maintenance Standard, resources are to be deployed as soon as practicable or within 12 hours when snow accumulation is greater than 8 cm, and if icy conditions are present, the municipality have 8 hours to treat the pavement condition.

The annual O&M cost impact for a separated cycle track on Elgin Mills Road from Woodbine Avenue to McCowan Road (6.8 km) is anticipated to be approximately \$666,763 versus \$411,943 for MUPs on Elgin Mills Road. The O&M difference between the two option is \$254,820. The detailed cost impact will be identified in the capital budget request for construction and will be included as part of the construction tender

award approval. Further, Table 1 shows the breakdown for winter and summer O&M cost for both options:

**Table 1: Winter and Summer O&M Cost Breakdown**  
**Elgin Mills Road from Woodbine Avenue to McCowan Road – 6.8km**

<b>Facility/Maintenance Type</b>	<b>Annual O&amp;M Cost</b>
<i>4 m concrete MUP Option:</i>	
Winter O&M	\$87,044
Summer O&M	\$324,899
<b>Subtotal</b>	<b>\$411,943</b>
<i>2 m concrete Cycle Track and 1.5 m Sidewalk Option:</i>	
Winter O&M	\$382,396
Summer O&M	\$284,367
<b>Subtotal</b>	<b>\$666,763</b>

Markham staff prepared a report to Development Services Committee in October 2017 titled “*In-Boulevard Cycle Track Annual Maintenance Policy*” and received approval to increase the operating budget to cover the annual operations and maintenance requirements for the Highway 7 cycle tracks and sidewalks. Similarly, City Staff will need to prepare a DSC report to receive approval for the increased O&M cost for Elgin Mills Rd if a cycle track and sidewalk option is recommended. These O&M costs are based on the current contract rates, and are subject to change.

#### **CONSTRUCTION SCHEDULE:**

Following posting of the Notice of Completion and expiration of the Schedule C Municipal Class EA study review period, staff are anticipating to procure the services of an engineering consultant to undertake detailed design. The proposed schedule for starting the detailed design assignment is February 2024 while the completion of detailed design is anticipated in April 2025. The proposed schedule to start construction is the summer of 2026, subject to property acquisition and permit approvals.

#### **FINANCIAL CONSIDERATIONS:**

The budget in the amount of \$1,835,800 for the detailed design, which is scheduled to commence in February 2024, has been approved under a 2021 budget request. As per the EA study, the cost estimate for the entire project, which includes construction, utility relocation, and property acquisition is in the order of \$150M (the major component of this cost comprises property acquisition). This is a high-level cost estimate and will be further refined as the detailed design work is completed.

The project is to be funded mainly from Development Charges (DCs), however, the most recent DC Background Study did not include the entire estimated cost of the project, due in part to a change in scope and cost increases; any shortfall in the costs will be included on the next update of the DC Background Study. Additionally, there is the potential for land to be removed from DCs and this item constitutes a major component of the project cost. The Province had indicated that details on the treatment of land in DCs will be

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available in the Fall of 2023, and staff await this information in order to assess if there will be any impact on land purchases through DCs going forward. Staff will explore funding options subsequent to the completion of the design and this could include the phasing of construction, in order to reduce and manage the development charge funding requirements over the term of the project.

**ALIGNMENT WITH STRATEGIC PRIORITIES:**

The project is aligned with the strategic goal of “Safe, Sustainable and Complete Community”.

**BUSINESS UNITS CONSULTED AND AFFECTED:**

Engineering, Operations, Finance, and Planning departments have reviewed this report and their comments have been incorporated.

**RECOMMENDED BY:**

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Frank Clarizio, P. Eng.  
Director of Engineering

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Arvin Prasad, MCIP, RPP  
Commissioner, Development  
Services

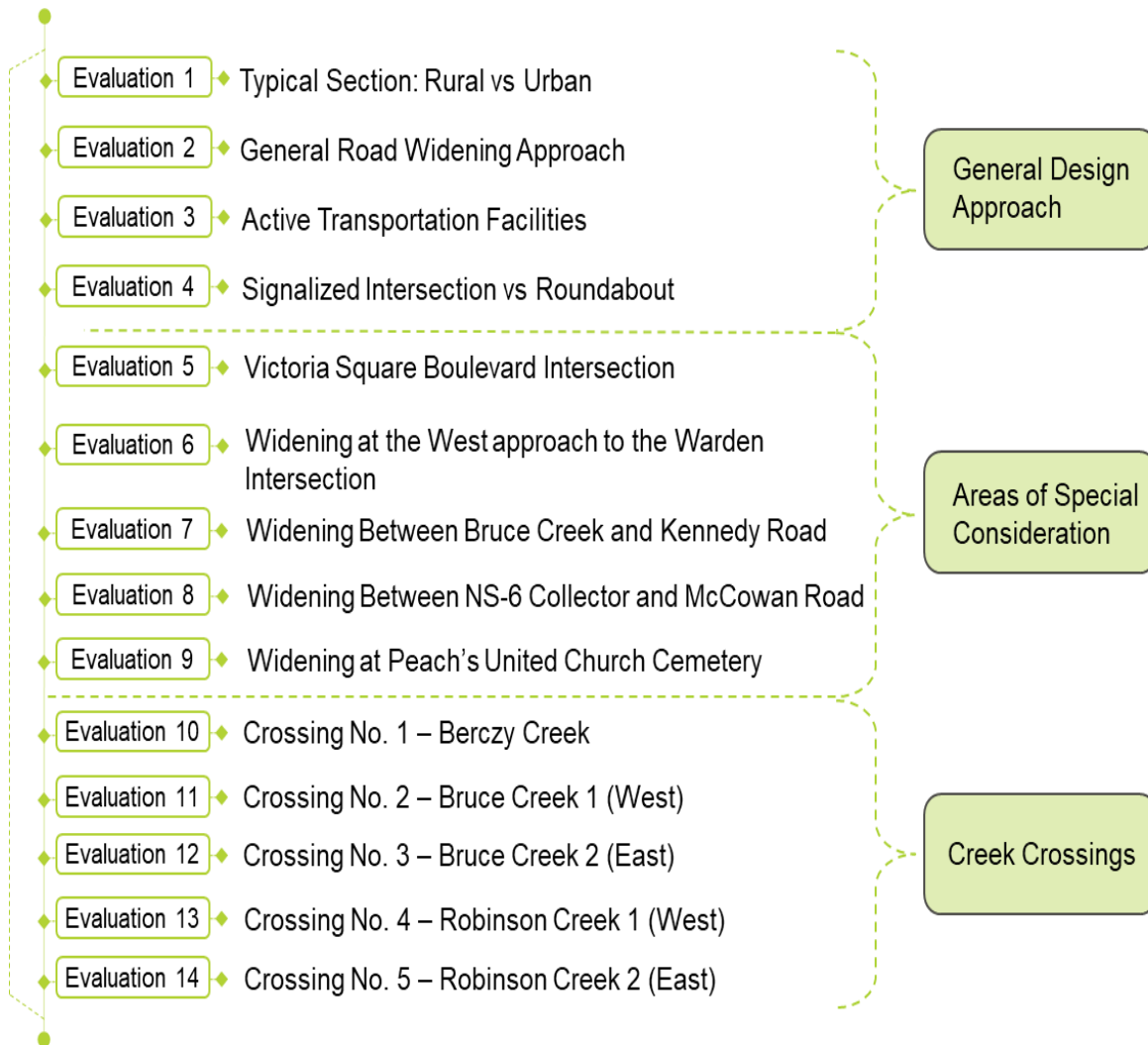
**ATTACHMENTS:**

- Attachment A: Study Area
- Attachment B: Evaluation Criteria
- Attachment C: Evaluation Matrix – Typical Section: Rural Vs Urban
- Attachment D: Evaluation Matrix – General Road Widening Approach
- Attachment E: Active Transportation Alternatives
- Attachment F: Evaluation Matrix – Active Transportation Facility

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## Attachment A: Study Area





**Attachment B: Evaluation Criteria**









**Attachment C: Evaluation Matrix - Typical Section: Rural vs Urban**

Category	Criteria	Design Solution 1	Design Solution 2
		Rural Cross Section	Urban Cross Section
Social Environment	Minimize Impacts on existing properties	<ul style="list-style-type: none"> <li>Significant impacts due to the requirement of a wider Right-of-way to accommodate rural drainage</li> </ul>	<ul style="list-style-type: none"> <li>Moderate impacts due to the required Right-of-Way.</li> <li>Option to further reduce boulevards to minimize impacts at pinch points</li> </ul>
	Improve access to Existing properties	<ul style="list-style-type: none"> <li>Improve access to users of other modes of transportation</li> <li>Improve access with added intersection traffic control and traffic capacity to reduce congestion</li> </ul>	
	Improve visual aesthetics and green spaces	<ul style="list-style-type: none"> <li>Improved through the provision of planted boulevards on one side</li> </ul>	<ul style="list-style-type: none"> <li>Greatly Improved through the provision of planted boulevards on both sides</li> </ul>
	Improve community character	<ul style="list-style-type: none"> <li>Improved through the provision of active transportation and better transit facilities</li> <li>Improved by better traffic flow</li> </ul>	<ul style="list-style-type: none"> <li>Improved through the provision of active transportation and better transit facilities</li> <li>Improved by better traffic flow</li> <li>Improved by planted boulevards on both sides</li> </ul>
	Preserve and/or enhance archaeological and cultural heritage features	<ul style="list-style-type: none"> <li>Significant impacts due to the requirement of a wider Right-of-way to accommodate rural drainage</li> </ul>	<ul style="list-style-type: none"> <li>Some impacts due to the required Right-of-Way.</li> <li>Option to further reduce boulevards to minimize impacts at pinch points</li> </ul>
	Minimize impacts to cemeteries and burial grounds	<ul style="list-style-type: none"> <li>Significant Impacts to cemetery at McCowan Rd. due to considerable wider Right-of-way</li> </ul>	<ul style="list-style-type: none"> <li>Moderate Impacts to cemetery at McCowan Rd.</li> <li>Possibility to avoid or mitigate these impacts with Asymmetrical widening and/or Boulevard reductions</li> </ul>
	Minimize traffic noise	<ul style="list-style-type: none"> <li>Less noise due to additional separation of traffic lanes from property</li> </ul>	<ul style="list-style-type: none"> <li>Is there significant noise????Mitigated by provision of planted boulevards on both sides and separation of traffic lanes to property lines (more than existing)</li> </ul>
	<b>Summary of Social Environment Criteria</b>	 <b>Least Preferred</b>	 <b>Preferred</b>




Category	Criteria	Design Solution 1	Design Solution 2
		Rural Cross Section	Urban Cross Section
Transportation Service	Improve traffic flow and accommodate future traffic demand	<ul style="list-style-type: none"> <li>Increased capacity to accommodate future traffic demand</li> <li>Mitigated by provision of active transportation facilities and connection to other networks to encourage use</li> </ul>	
	Support Transit improvements and operations	<ul style="list-style-type: none"> <li>Transit service will be enhanced with increased capacity and provision of bus stops</li> </ul>	
	Provide connections to existing and future transportation networks (all modes)	<ul style="list-style-type: none"> <li>Connections to future networks and destinations on both sides of the road can be accommodated</li> </ul>	
	Accommodate users of all ages, abilities, and types of users	<ul style="list-style-type: none"> <li>Greatly improves existing conditions by providing pedestrian and cycling facilities separated from vehicles</li> </ul>	
	Provide for safe cyclist facilities and minimizes conflicts with other modes of transportation	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous cycling facilities</li> <li>Separation from vehicles and reduction of potential conflicts</li> </ul>	
	Provide for safe pedestrian facilities and minimizes conflicts with other modes of transportation	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous pedestrian facilities</li> <li>Separation from vehicles and reduction of potential conflicts</li> </ul>	
	Improve safety for vehicles	<ul style="list-style-type: none"> <li>Provide for consistent design features and separation of other modes of transportation for reduction of potential conflicts</li> </ul>	
	Summary of Transportation Service Criteria	 Preferred	 Preferred




Category	Criteria	Design Solution 1	Design Solution 2
		Rural Cross Section	Urban Cross Section
Natural Environment	Protect Natural Areas	<ul style="list-style-type: none"><li>• Moderate to Significant impacts due to the requirement of a wider Right-of-way to accommodate rural drainage</li></ul>	<ul style="list-style-type: none"><li>• Moderate impacts due to the required Right-of-Way.</li><li>• Versatility to further reduce boulevards to minimize impacts at pinch points</li></ul>
	Minimize impacts to Species at Risk	<ul style="list-style-type: none"><li>• Potential for moderate impacts with additional property requirements</li></ul>	<ul style="list-style-type: none"><li>• Potential for minor impacts with additional property requirements</li></ul>
	Minimize impacts to vegetation		
	Minimize impacts to wildlife		
	Minimize impacts to aquatic habitat		
	Minimize impacts to surface and ground water	<ul style="list-style-type: none"><li>• Moderate impact with increased roadway width and hard surface area to accommodate additional lanes and active transportation facilities</li><li>• Stormwater quantity will increase, and quality mitigation may be required</li><li>• Moderate impact to shallow groundwater system due to potential increase in contaminants related to increased roadway width</li></ul>	
	Minimize impacts to air quality	<ul style="list-style-type: none"><li>• Mitigation of impacts from increased traffic volumes by reducing potential congestion with the provision of additional lanes</li><li>• Minor improvement to air quality through increased Transit frequency and provision of bus bays vehicles to reduce congestion</li><li>• Active transportation and transit service improvements can reduce dependence on automobile and provide air quality improvements</li><li>• Minor improvement in air quality on adjacent streets due to reduction in traffic diversion</li></ul>	
	Minimize impacts to climate change	<ul style="list-style-type: none"><li>• Improvements with enhanced mode choice and decreased congestion can minimize effects on climate change</li><li>• Opportunities for implementation of tree plantings and Low Impact Development stormwater management strategies as part of road improvements can improve the study corridor resiliency to climate change</li></ul>	

Category	Criteria	Design Solution 1	Design Solution 2
		Rural Cross Section	Urban Cross Section
	Summary of Natural Environment Criteria	 Less Preferred	 Preferred
Infrastructure Design	Minimize utility relocation	• Moderate to Significant utility relocation anticipated to accommodate additional right-of-way	
	Minimize property requirements	• Moderate to significant property impacts to accommodate additional Right-of-way	• Moderate property impacts to accommodate additional Right-of-way
	Consistency with municipal standards for the type of road	• Compliance with Municipal and Regional standards	
	Minimize disruption due to construction	• Significant impacts to roadway users and surrounding property owners to construct additional lanes and active transportation facilities. To be mitigated with construction staging and traffic management plan strategy.	
	Summary of Infrastructure Design Criteria	 Less Preferred	 Preferred
Cost Effectiveness	Minimize capital costs	<ul style="list-style-type: none"> <li>• Less construction costs</li> <li>• Higher property acquisition costs</li> </ul>	<ul style="list-style-type: none"> <li>• Higher construction costs</li> <li>• Less property acquisition costs</li> </ul>
	Minimize operating and maintenance costs	• Higher operating and maintenance cost	• Less operating and maintenance cost
	Minimize cost to implement known future projects	• Not Compatible with future densification	• Compatible with future densification
	Summary of Cost Effectiveness Criteria	 Less Preferred	 Preferred

Category	Criteria	Design Solution 1	Design Solution 2
		Rural Cross Section	Urban Cross Section
Recommendation			Recommended










**Attachment D: Evaluation Matrix – General Road Widening Approach**

Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3
		Symmetrical Widening	A-Symmetrical Widening to the South	A-Symmetrical Widening to the North
Social Environment	Minimize Impacts on existing properties	<ul style="list-style-type: none"> <li>Minor impacts to properties as less area is required from each property</li> <li>Almost no displacement of residential properties required and possibility of mitigation of these impacts with constrained sections</li> </ul>	<ul style="list-style-type: none"> <li>Mayor property impacts as property on the South are greatly affected</li> <li>Significant displacement of residential properties between Prince Regent St. and the Hydro Corridor</li> </ul>	<ul style="list-style-type: none"> <li>Mayor property impacts as property on the North are greatly affected</li> <li>Significant displacement of residential properties between Duke of York St. and the Hydro Corridor and between Warden Ave. and East Kennedy Rd.</li> </ul>
	Improve access to Existing properties	<ul style="list-style-type: none"> <li>Improve access to users of other modes of transportation</li> <li>Improve access with added intersection traffic control and traffic capacity to reduce congestion</li> </ul>		
	Improve visual aesthetics and green spaces	<ul style="list-style-type: none"> <li>Greatly Improved through the provision of planted boulevards and localized tree plantings</li> </ul>		
	Improve community character	<ul style="list-style-type: none"> <li>Improved by maintaining existing historical properties</li> <li>Improved through the provision of active transportation and better transit facilities</li> <li>Improved by better traffic flow</li> </ul>	<ul style="list-style-type: none"> <li>Improved through the provision of active transportation and better transit facilities</li> <li>Improved by better traffic flow</li> </ul>	
	Preserve and/or enhance archaeological and cultural heritage features	<ul style="list-style-type: none"> <li>Minor impacts to lands with archaeological potential</li> <li>One property with potential for Cultural Heritage designation affected</li> <li>Possibility of mitigation with the use of constrained sections</li> </ul>	<ul style="list-style-type: none"> <li>Mayor impacts to lands with archaeological potential</li> <li>Mayor impacts to properties designated as properties of Cultural Heritage and properties with potential</li> </ul>	
	Minimize impacts to cemeteries and burial grounds	<ul style="list-style-type: none"> <li>Minor impacts to the Peach's United Church Cemetery at McCowan Rd.</li> </ul>	<ul style="list-style-type: none"> <li>No impacts to the Peach's United Church Cemetery at McCowan Rd.</li> </ul>	<ul style="list-style-type: none"> <li>Significant Impacts to the Peach's United Church Cemetery at McCowan Rd.</li> </ul>
	Minimize traffic noise	<ul style="list-style-type: none"> <li>Minor impacts as noise levels are expected to increase slightly because of additional lanes</li> </ul>		
	Summary of Social Environment Criteria	 Preferred	 Less Preferred	 Least Preferred

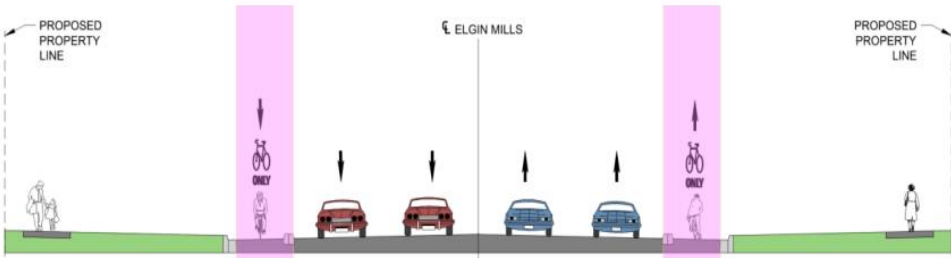
Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3
		Symmetrical Widening	A-Symmetrical Widening to the South	A-Symmetrical Widening to the North
Transportation Service	Improve traffic flow and accommodate future traffic demand	<ul style="list-style-type: none"> <li>Increased capacity to accommodate future traffic demand</li> <li>Mitigated by provision of active transportation facilities and connection to other networks to encourage use</li> </ul>		
	Support Transit improvements and operations	<ul style="list-style-type: none"> <li>Transit service will be enhanced with increased capacity and provision stops</li> </ul>		
	Provide connections to existing and future transportation networks (all modes)	<ul style="list-style-type: none"> <li>Connections to future networks and destinations on both sides of the road can be accommodated</li> </ul>		
	Accommodate users of all ages, abilities, and types of users	<ul style="list-style-type: none"> <li>Greatly improves existing conditions by providing pedestrian and cycling facilities separated from vehicles</li> </ul>		
	Provide for safe cyclist facilities and minimizes conflicts with other modes of transportation	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous cycling facilities</li> <li>Separation from vehicles and reduction of potential conflicts</li> </ul>		
	Provide for safe pedestrian facilities and minimizes conflicts with other modes of transportation	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous pedestrian facilities</li> <li>Separation from vehicles and reduction of potential conflicts</li> </ul>		
	Improve safety for vehicles	<ul style="list-style-type: none"> <li>Provide for consistent design features and separation of other modes of transportation for reduction of potential conflicts</li> </ul>		
	<b>Summary of Transportation Service Criteria</b>	 <b>Preferred</b>	 <b>Preferred</b>	 <b>Preferred</b>
Natural Environment	Protect Natural Areas	<ul style="list-style-type: none"> <li>No impacts to Areas of Natural and Scientific Interest (ANSIs)</li> <li>Minimal impacts to Provincially Significant Wetlands (PSWs)</li> </ul>		
		<ul style="list-style-type: none"> <li>No impacts to Areas of Natural and Scientific Interest (ANSIs)</li> <li>Minor to moderate impacts to Provincially Significant Wetlands (PSWs)</li> </ul>		

Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3
		Symmetrical Widening	A-Symmetrical Widening to the South	A-Symmetrical Widening to the North
	Minimize impacts to Species at Risk	<ul style="list-style-type: none"> <li>• Potential for minor impacts with additional property requirement</li> </ul>	<ul style="list-style-type: none"> <li>• Potential for moderate impacts with additional property requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Potential for moderate impacts with additional property requirements</li> </ul>
	Minimize impacts to vegetation	<ul style="list-style-type: none"> <li>• Impacts to Vegetation communities immediately adjacent to the Elgin Mills Rd. Right-of-way which are largely comprised of a mixture of cultural vegetation which generally contain a high proportion of invasive and non-native plant species.</li> <li>• Potential of minor impacts to meadows and forest vegetation in proximity to the existing watercourses</li> <li>• Minor impacts to vegetation communities and mature tree growth due to wider right of way platform</li> </ul>	<ul style="list-style-type: none"> <li>• Impacts to Vegetation communities immediately adjacent to the Elgin Mills Rd. Right-of-way which are largely comprised of a mixture of cultural vegetation which generally contain a high proportion of invasive and non-native plant species.</li> <li>• Potential of moderate to severe impacts to meadows and forest vegetation in proximity to the existing watercourses</li> <li>• Moderate impacts to vegetation communities and mature tree growth due to wider right of way platform</li> </ul>	<ul style="list-style-type: none"> <li>• Impacts to Vegetation communities immediately adjacent to the Elgin Mills Rd. Right-of-way which are largely comprised of a mixture of cultural vegetation which generally contain a high proportion of invasive and non-native plant species.</li> <li>• Potential of moderate to severe impacts to meadows and forest vegetation in proximity to the existing watercourses</li> <li>• Moderate impacts to vegetation communities and mature tree growth due to wider right of way platform</li> </ul>
	Minimize impacts to wildlife	<ul style="list-style-type: none"> <li>• Potential for minor impacts on wildlife due to a wider roadway platform</li> <li>• Potential for impacts to breeding birds</li> </ul>		
	Minimize impacts to aquatic habitat	<ul style="list-style-type: none"> <li>• Potential impacts to frogs and turtle species as they were identified on both sides of the road</li> </ul>		
	Minimize impacts to surface and ground water	<ul style="list-style-type: none"> <li>• Moderate impact with increased roadway width and hard surface area to accommodate additional lanes and active transportation facilities</li> <li>• Stormwater quantity will increase and quality mitigation may be required</li> <li>• Moderate impact to shallow groundwater system due to potential increase in contaminants related to increased roadway width</li> </ul>		
	Minimize impacts to air quality	<ul style="list-style-type: none"> <li>• Mitigation of impacts from increased traffic volumes by reducing potential congestion with the provision of additional lanes</li> <li>• Minor improvement to air quality through increased Transit frequency and provision of bus bays vehicles to reduce congestion</li> <li>• Active transportation and transit service improvements can reduce dependence on automobile and provide air quality improvements</li> <li>• Minor improvement in air quality on adjacent streets due to reduction in traffic diversion</li> </ul>		

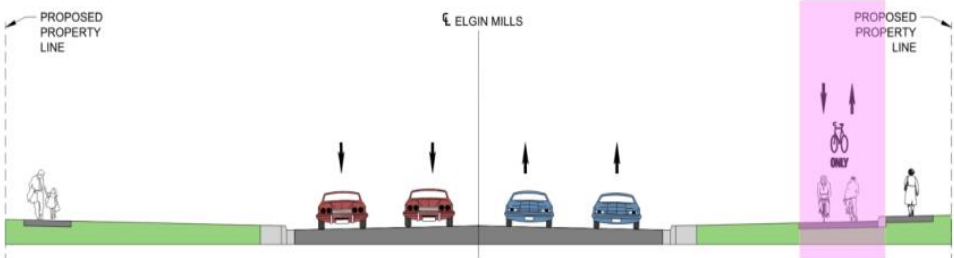


Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3
		Symmetrical Widening	A-Symmetrical Widening to the South	A-Symmetrical Widening to the North
	Minimize impacts to climate change	<ul style="list-style-type: none"><li>• Improvements with enhanced mode choice and decreased congestion can minimize effects on climate change</li><li>• Opportunities for implementation of tree plantings and Low Impact Development stormwater management strategies as part of road improvements can improve the study corridor resiliency to climate change</li></ul>		
	Summary of Natural Environment Criteria	 Preferred	 Less Preferred	 Less Preferred
Infrastructure Design	Minimize utility relocation	<ul style="list-style-type: none"><li>• Moderate to Significant utility relocation anticipated to accommodate additional right-of-way</li></ul>	<ul style="list-style-type: none"><li>• Moderate utility relocation anticipated to accommodate additional right-of-way</li></ul>	<ul style="list-style-type: none"><li>• Moderate utility relocation anticipated to accommodate additional right-of-way</li></ul>
	Minimize property requirements	<ul style="list-style-type: none"><li>• Moderate property impacts</li></ul>	<ul style="list-style-type: none"><li>• Significant property impacts as some properties have to be fully acquired due to impacts</li></ul>	
	Consistency with municipal standards for the type of road	<ul style="list-style-type: none"><li>• Compliance with Municipal and Regional standards</li></ul>		
	Minimize disruption due to construction	<ul style="list-style-type: none"><li>• Significant impacts to roadway users and surrounding property owners to construct additional lanes and active transportation facilities. To be mitigated with construction staging and traffic management plan strategy.</li></ul>		
	Summary of Infrastructure Design Criteria	 Preferred	 Less Preferred	 Less Preferred
Cost Effectiveness	Minimize capital costs	<ul style="list-style-type: none"><li>• Moderate construction costs</li><li>• Moderate property acquisition costs</li></ul>	<ul style="list-style-type: none"><li>• Moderate construction costs</li><li>• Mayor property acquisition costs</li></ul>	<ul style="list-style-type: none"><li>• Moderate construction costs</li><li>• Mayor property acquisition costs</li></ul>
	Minimize operating and maintenance costs	<ul style="list-style-type: none"><li>• Moderate increase in operating cost due to additional lanes and active transportation facilities</li></ul>		
	Minimize cost to implement known future projects	<ul style="list-style-type: none"><li>• Compatible with future densification</li></ul>		
	Summary of Cost Effectiveness Criteria	 Preferred	 Less Preferred	 Less Preferred
Recommendation		Recommended		

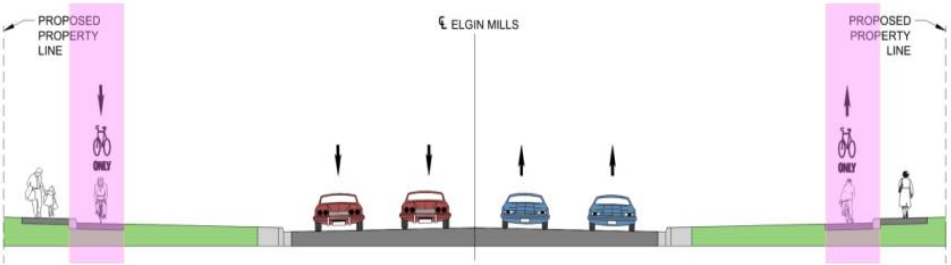
Attachment E: Active Transportation Alternatives



Option 1: Protected Uni-directional Bike Lane + Sidewalks



Option 2: Bi-directional Cycle Track + Sidewalks







Option 3: Uni-directional Cycle Track + Sidewalks











Option 4: Combined Facility (Multi-use Path)









**Attachment F: Evaluation Matrix – Active Transportation Facility**

Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3	Design Solution 4
		Uni-Directional Bike Lanes + Sidewalks (both sides)	Bi-Directional Bike Path (one side) + Sidewalks (both sides)	Uni-Directional Bike Path + Sidewalks (both sides)	Multi-Use Path (both sides)
Social Environment	Minimize Impacts on existing properties	<ul style="list-style-type: none"> <li>Moderate impacts due to the required Right-of-Way.</li> <li>Option to further reduce boulevards to minimize impacts at pinch points</li> </ul>			
	Improve access to Existing properties	<ul style="list-style-type: none"> <li>Improve access to users of other modes of transportation</li> <li>Improve access with added intersection traffic control and traffic capacity to reduce congestion</li> <li>Uni-directional cycling facilities minimize potential conflicts with adjacent driveways and sidewalks based on expectation of the direction of travel for the cyclists</li> </ul>	<ul style="list-style-type: none"> <li>Access to cycling facilities from properties on one side of the road is Limited to</li> </ul>	<ul style="list-style-type: none"> <li>Improve access to users of other modes of transportation</li> <li>Improve access with added intersection traffic control and traffic capacity to reduce congestion</li> <li>Uni-directional cycling facilities minimize potential conflicts with adjacent driveways and sidewalks based on expectation of the direction of travel for the cyclists</li> </ul>	<ul style="list-style-type: none"> <li>Improve access to users of other modes of transportation</li> <li>Improve access with added intersection traffic control and traffic capacity to reduce congestion</li> </ul>
	Improve visual aesthetics and green spaces	<ul style="list-style-type: none"> <li>Greatly Improved through the provision of planted boulevards and localized tree plantings</li> </ul>			
	Improve community character	<ul style="list-style-type: none"> <li>Improved through the provision of active transportation and better transit facilities</li> <li>Improved by better traffic flow</li> </ul>			
	Preserve and/or enhance archaeological and cultural heritage features	<ul style="list-style-type: none"> <li>Some impacts due to the required Right-of-Way.</li> <li>Option to further reduce boulevards to minimize impacts at pinch points</li> </ul>			
	Minimize impacts to cemeteries and burial grounds	<ul style="list-style-type: none"> <li>Moderate Impacts to cemetery at McCowan Rd.</li> <li>Possibility to avoid or mitigate these impacts with Asymmetrical widening and/or Boulevard reductions</li> </ul>			
	Minimize traffic noise	<ul style="list-style-type: none"> <li>Minor impacts as noise levels are expected to increase slightly because of additional lanes</li> </ul>			

Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3	Design Solution 4
		Uni-Directional Bike Lanes + Sidewalks (both sides)	Bi-Directional Bike Path (one side) + Sidewalks (both sides)	Uni-Directional Bike Path + Sidewalks (both sides)	Multi-Use Path (both sides)
	Summary of Social Environment Criteria	 Preferred	 Less Preferred	 Preferred	 Preferred
Transportation Service	Improve traffic flow and accommodate future traffic demand	<ul style="list-style-type: none"> <li>Increased capacity to accommodate future traffic demand</li> <li>Provision of active transportation facilities on both sides will further encourage use and increase active transportation use</li> </ul>	<ul style="list-style-type: none"> <li>Increased capacity to accommodate future traffic demand</li> <li>Provision of active transportation facilities on one side</li> </ul>	<ul style="list-style-type: none"> <li>Increased capacity to accommodate future traffic demand</li> <li>Provision of active transportation facilities on both sides will further encourage use and increase active transportation use</li> </ul>	
	Support Transit improvements and operations	<ul style="list-style-type: none"> <li>Transit service will be enhanced with increased capacity and provision of bus stops</li> <li>Conflicts between transit vehicles and users with cyclist at bus stops</li> </ul>	<ul style="list-style-type: none"> <li>Transit service will be enhanced with increased capacity and provision of bus stops</li> <li>Potential for conflicts between pedestrians wanting to access the bus stop from the sidewalk and cyclist</li> <li>Access for cyclist to stops on the other side of the road is limited</li> </ul>	<ul style="list-style-type: none"> <li>Transit service will be enhanced with increased capacity and provision of bus stops</li> <li>Potential for conflicts between pedestrians wanting to access the bus stop from the sidewalk and cyclist</li> </ul>	<ul style="list-style-type: none"> <li>Transit service will be enhanced with increased capacity and provision of bus stops</li> <li>Potential for conflicts between pedestrians wanting to access the bus stop from the sidewalk and cyclist</li> </ul>
	Provide connections to existing and future transportation networks (all modes)	<ul style="list-style-type: none"> <li>Connections to future networks and destinations on both sides of the road can be accommodated</li> <li>Potential for longer travel distances due to inability to travel in the opposite direction</li> </ul>	<ul style="list-style-type: none"> <li>Connections to future networks and destinations on one sides of the road can be accommodated</li> </ul>	<ul style="list-style-type: none"> <li>Connections to future networks and destinations on both sides of the road can be accommodated</li> <li>Potential for longer travel distances due to inability to travel in the opposite direction</li> </ul>	<ul style="list-style-type: none"> <li>Connections to future networks and destinations on both sides of the road can be accommodated</li> </ul>
	Accommodate users of all ages, abilities, and types of users	<ul style="list-style-type: none"> <li>Greatly improves existing conditions by providing pedestrian and cycling facilities separated from vehicles</li> </ul>			

Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3	Design Solution 4
		Uni-Directional Bike Lanes + Sidewalks (both sides)	Bi-Directional Bike Path (one side) + Sidewalks (both sides)	Uni-Directional Bike Path + Sidewalks (both sides)	Multi-Use Path (both sides)
	Provide for safe cyclist facilities and minimizes conflicts with other modes of transportation	<ul style="list-style-type: none"> <li>Separated facilities from vehicular traffic provides for safe facilities</li> <li>Potential conflicts with turning vehicles at intersections if there is limited space to accommodate a safe design</li> </ul>	<ul style="list-style-type: none"> <li>Separated facilities from vehicular traffic provides for safe facilities</li> </ul>		
	Provide for safe pedestrian facilities and minimizes conflicts with other modes of transportation	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous pedestrian facilities</li> <li>Separation from vehicles and from cyclist greatly reduces the potential for conflicts</li> </ul>	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous pedestrian facilities</li> <li>Separation from vehicles and from cyclist greatly reduces the potential for conflicts</li> </ul>	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous pedestrian facilities</li> <li>Separation from vehicles and from cyclist greatly reduces the potential for conflicts</li> </ul>	<ul style="list-style-type: none"> <li>Improved safety by provision of continuous pedestrian facilities</li> <li>Potential conflicts between pedestrians and cyclist due to shared facilities.</li> </ul>
	Improve safety for vehicles	<ul style="list-style-type: none"> <li>Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts</li> <li>Reduced conflicts as drivers expects cyclist to travel in one direction</li> <li>Potential conflicts with turning vehicles at intersections if there is limited space to accommodate a safe design</li> </ul>	<ul style="list-style-type: none"> <li>Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts</li> <li>Potential conflicts with turning vehicles at intersections if there is limited space to accommodate a safe design</li> </ul>	<ul style="list-style-type: none"> <li>Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts</li> <li>Reduced conflicts as drivers expects cyclist to travel in one direction</li> <li>Reduced conflicts with vehicles as crossrides are located in proximity with crosswalks</li> </ul>	<ul style="list-style-type: none"> <li>Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts</li> <li>Reduced conflicts with vehicles as crossrides are located in proximity with crosswalks</li> </ul>
	Summary of Transportation Service Criteria	 Less Preferred	 Less Preferred	 Preferred	 Preferred
Natural Environment	Protect Natural Areas	<ul style="list-style-type: none"> <li>No difference between the different design solutions</li> </ul>			
	Minimize impacts to Species at Risk	<ul style="list-style-type: none"> <li>No difference between the different design solutions</li> </ul>			

Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3	Design Solution 4
		Uni-Directional Bike Lanes + Sidewalks (both sides)	Bi-Directional Bike Path (one side) + Sidewalks (both sides)	Uni-Directional Bike Path + Sidewalks (both sides)	Multi-Use Path (both sides)
	Minimize impacts to vegetation				
	Minimize impacts to wildlife				
	Minimize impacts to aquatic habitat				
	Minimize impacts to surface and ground water	• No difference between the different design solutions			
	Minimize impacts to air quality	• No difference between the different design solutions			
	Minimize impacts to climate change	• No difference between the different design solutions			
	<b>Summary of Natural Environment Criteria</b>	 <b>Preferred</b>	 <b>Preferred</b>	 <b>Preferred</b>	 <b>Preferred</b>
<b>Infrastructure Design</b>	Minimize utility relocation	• No difference between the different design solutions			
	Minimize property requirements	• No difference between the different design solutions			
	Consistency with municipal standards for the type of road	• Compliance with cycling standards			<ul style="list-style-type: none"> <li>• Compliance with cycling standards</li> <li>• Multi-Use Paths are recommended for Rural Hamlet roads as per York Region's Design Great Streets Guidelines</li> </ul>
	Minimize disruption due to construction	• No difference between the different design solutions			

Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3	Design Solution 4
		Uni-Directional Bike Lanes + Sidewalks (both sides)	Bi-Directional Bike Path (one side) + Sidewalks (both sides)	Uni-Directional Bike Path + Sidewalks (both sides)	Multi-Use Path (both sides)
	Summary of Infrastructure Design Criteria	 Less Preferred	 Less Preferred	 Less Preferred	 Preferred
Cost Effectiveness	Minimize capital costs	<ul style="list-style-type: none"> <li>• Higher Construction Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Less Construction Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Higher Construction Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Least construction cost</li> </ul>
	Minimize operating and maintenance costs	<ul style="list-style-type: none"> <li>• Higher operating and maintenance cost as separated facilities are more costly to maintain</li> <li>• More area to maintain</li> </ul>	<ul style="list-style-type: none"> <li>• Less operating and maintenance cost</li> </ul>	<ul style="list-style-type: none"> <li>• Higher operating and maintenance cost as separated facilities are more costly to maintain</li> <li>• More area to maintain</li> </ul>	<ul style="list-style-type: none"> <li>• Least maintenance cost</li> </ul>
	Minimize cost to implement known future projects	<ul style="list-style-type: none"> <li>• Compatible with future densification</li> </ul>	<ul style="list-style-type: none"> <li>• Less connections to future development on the opposite side</li> </ul>	<ul style="list-style-type: none"> <li>• Compatible with future densification</li> </ul>	<ul style="list-style-type: none"> <li>• Compatible with future densification</li> </ul>
	Summary of Cost Effectiveness Criteria	 Least Preferred	 Less Preferred	 Least Preferred	 Preferred
Recommendation					Recommended