
SUBJECT: Elgin Mills Road, Schedule C Municipal Class Environmental Assessment (EA) Study (Wards 2, 5 and 6)

PREPARED BY: Marina Riad, Engineer, Capital Works

REVIEWED BY: Salia Kalali, Manager, Infrastructure and Capital Works
Alain Cachola, Senior Manager, Infrastructure and Capital Works

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 further,
- 4) 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, staff received Council approval to request 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. The Region added that there are priority projects within York Region included in their 10-year capital program that have 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;
- 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.

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 was to implement multi-use path on both sides of Elgin Mills Road as shown in **Attachment F**.

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.

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- **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:

The approved Active Transportation Master Plan (ATMP) indicates multi-use paths (MUP) of up to 4 meters on Elgin Mills Road within the study area limits. The incremental cost for operations and maintenance (O&M) has been approved in May 2022 as a part of the Active Transportation Master Plan report. The O&M cost impact will be identified in the Capital Budget request for construction and will be included as part of the construction tender award approval.

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 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:

Frank Clarizio, P. Eng.
Director of Engineering

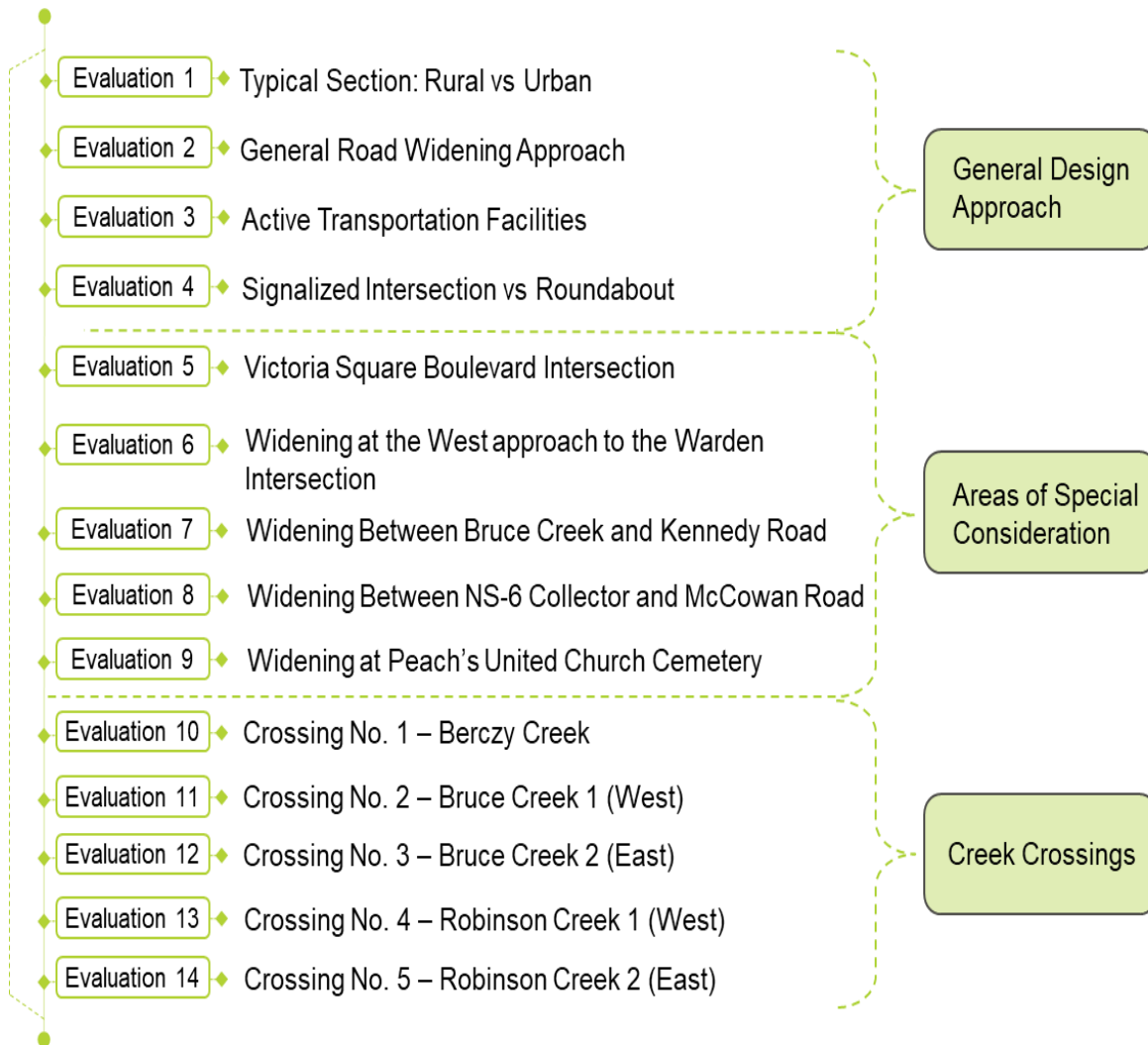
Arvin Prasad, MCIP, RPP
Commissioner, Development
Services

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

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	Significant impacts due to the requirement of a wider Right-of-way to accommodate rural drainage	- Moderate impacts due to the required Right-of-Way. - Option to further reduce boulevards to minimize impacts at pinch points
	Improve access to Existing properties	- Improve access to users of other modes of transportation - Improve access with added intersection traffic control and traffic capacity to reduce congestion	
	Improve visual aesthetics and green spaces	Improved through the provision of planted boulevards on one side	Greatly Improved through the provision of planted boulevards on both sides
	Improve community character	- Improved through the provision of active transportation and better transit facilities - Improved by better traffic flow	- Improved through the provision of active transportation and better transit facilities - Improved by better traffic flow - Improved by planted boulevards on both sides
	Preserve and/or enhance archaeological and cultural heritage features	Significant impacts due to the requirement of a wider Right-of-way to accommodate rural drainage	- Some impacts due to the required Right-of-Way. - Option to further reduce boulevards to minimize impacts at pinch points
	Minimize impacts to cemeteries and burial grounds	Significant Impacts to cemetery at McCowan Rd. due to considerable wider Right-of-way	- Moderate Impacts to cemetery at McCowan Rd. - Possibility to avoid or mitigate these impacts with Asymmetrical widening and/or Boulevard reductions
	Minimize traffic noise	Less noise due to additional separation of traffic lanes from property	Is there significant noise????Mitigated by provision of planted boulevards on both sides and separation of traffic lanes to property lines (more than existing)
	Summary of Social Environment Criteria	 Least Preferred	 Preferred

Category	Criteria	Design Solution 1	Design Solution 2
		Rural Cross Section	Urban Cross Section
Transportation Service	Improve traffic flow and accommodate future traffic demand	- Increased capacity to accommodate future traffic demand - Mitigated by provision of active transportation facilities and connection to other networks to encourage use	
	Support Transit improvements and operations	Transit service will be enhanced with increased capacity and provision of bus stops	
	Provide connections to existing and future transportation networks (all modes)	Connections to future networks and destinations on both sides of the road can be accommodated	
	Accommodate users of all ages, abilities, and types of users	Greatly improves existing conditions by providing pedestrian and cycling facilities separated from vehicles	
	Provide for safe cyclist facilities and minimizes conflicts with other modes of transportation	- Improved safety by provision of continuous cycling facilities - Separation from vehicles and reduction of potential conflicts	
	Provide for safe pedestrian facilities and minimizes conflicts with other modes of transportation	- Improved safety by provision of continuous pedestrian facilities - Separation from vehicles and reduction of potential conflicts	
	Improve safety for vehicles	Provide for consistent design features and separation of other modes of transportation for reduction of potential conflicts	
	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	• Moderate to Significant impacts due to the requirement of a wider Right-of-way to accommodate rural drainage	• Moderate impacts due to the required Right-of-Way. • Versatility to further reduce boulevards to minimize impacts at pinch points
	Minimize impacts to Species at Risk	• Potential for moderate impacts with additional property requirements	• Potential for minor impacts with additional property requirements
	Minimize impacts to vegetation		
	Minimize impacts to wildlife		
	Minimize impacts to aquatic habitat		
	Minimize impacts to surface and ground water	• Moderate impact with increased roadway width and hard surface area to accommodate additional lanes and active transportation facilities • Stormwater quantity will increase, and quality mitigation may be required • Moderate impact to shallow groundwater system due to potential increase in contaminants related to increased roadway width	
	Minimize impacts to air quality	• Mitigation of impacts from increased traffic volumes by reducing potential congestion with the provision of additional lanes • Minor improvement to air quality through increased Transit frequency and provision of bus bays vehicles to reduce congestion • Active transportation and transit service improvements can reduce dependence on automobile and provide air quality improvements • Minor improvement in air quality on adjacent streets due to reduction in traffic diversion	
	Minimize impacts to climate change	• Improvements with enhanced mode choice and decreased congestion can minimize effects on climate change • 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	

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	• Less construction costs • Higher property acquisition costs	• Higher construction costs • Less property acquisition costs
	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

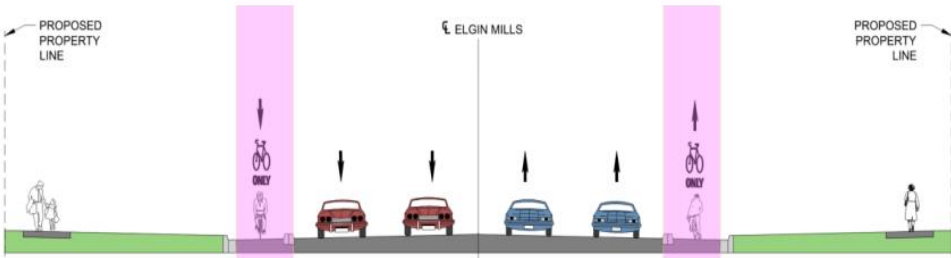
Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3
		Symmetrical Widening	A-Symmetrical Widening to the South	A-Symmetrical Widening to the North
Social Environment	Minimize Impacts on existing properties	• Minor impacts to properties as less area is required from each property • Almost no displacement of residential properties required and possibility of mitigation of these impacts with constrained sections	• Mayor property impacts as property on the South are greatly affected • Significant displacement of residential properties between Prince Regent St. and the Hydro Corridor	• Mayor property impacts as property on the North are greatly affected • Significant displacement of residential properties between Duke of York St. and the Hydro Corridor and between Warden Ave. and East Kennedy Rd.
	Improve access to Existing properties	• Improve access to users of other modes of transportation • Improve access with added intersection traffic control and traffic capacity to reduce congestion		
	Improve visual aesthetics and green spaces	• Greatly Improved through the provision of planted boulevards and localized tree plantings		
	Improve community character	• Improved by maintaining existing historical properties • Improved through the provision of active transportation and better transit facilities • Improved by better traffic flow	• Improved through the provision of active transportation and better transit facilities • Improved by better traffic flow	
	Preserve and/or enhance archaeological and cultural heritage features	• Minor impacts to lands with archaeological potential • One property with potential for Cultural Heritage designation affected • Possibility of mitigation with the use of constrained sections	• Mayor impacts to lands with archaeological potential • Mayor impacts to properties designated as properties of Cultural Heritage and properties with potential	
	Minimize impacts to cemeteries and burial grounds	• Minor impacts to the Peach's United Church Cemetery at McCowan Rd.	• No impacts to the Peach's United Church Cemetery at McCowan Rd.	• Significant Impacts to the Peach's United Church Cemetery at McCowan Rd.
	Minimize traffic noise	• Minor impacts as noise levels are expected to increase slightly because of additional lanes		
	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	- Increased capacity to accommodate future traffic demand - Mitigated by provision of active transportation facilities and connection to other networks to encourage use		
	Support Transit improvements and operations	Transit service will be enhanced with increased capacity and provision stops		
	Provide connections to existing and future transportation networks (all modes)	Connections to future networks and destinations on both sides of the road can be accommodated		
	Accommodate users of all ages, abilities, and types of users	Greatly improves existing conditions by providing pedestrian and cycling facilities separated from vehicles		
	Provide for safe cyclist facilities and minimizes conflicts with other modes of transportation	- Improved safety by provision of continuous cycling facilities - Separation from vehicles and reduction of potential conflicts		
	Provide for safe pedestrian facilities and minimizes conflicts with other modes of transportation	- Improved safety by provision of continuous pedestrian facilities - Separation from vehicles and reduction of potential conflicts		
	Improve safety for vehicles	Provide for consistent design features and separation of other modes of transportation for reduction of potential conflicts		
	Summary of Transportation Service Criteria	 Preferred	 Preferred	 Preferred
Natural Environment	Protect Natural Areas	- No impacts to Areas of Natural and Scientific Interest (ANSIs) - Minimal impacts to Provincially Significant Wetlands (PSWs)		
		- No impacts to Areas of Natural and Scientific Interest (ANSIs) - Minor to moderate impacts to Provincially Significant Wetlands (PSWs)		

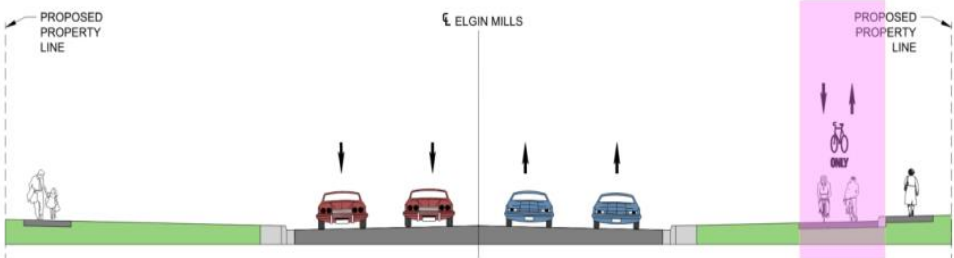
Category	Criteria	Design Solution 1	Design Solution 2	Design Solution 3
		Symmetrical Widening	A-Symmetrical Widening to the South	A-Symmetrical Widening to the North
	Minimize impacts to Species at Risk	• Potential for minor impacts with additional property requirement	• Potential for moderate impacts with additional property requirements	• Potential for moderate impacts with additional property requirements
	Minimize impacts to vegetation	• 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. • Potential of minor impacts to meadows and forest vegetation in proximity to the existing watercourses • Minor impacts to vegetation communities and mature tree growth due to wider right of way platform	• 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. • Potential of moderate to severe impacts to meadows and forest vegetation in proximity to the existing watercourses • Moderate impacts to vegetation communities and mature tree growth due to wider right of way platform	• 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. • Potential of moderate to severe impacts to meadows and forest vegetation in proximity to the existing watercourses • Moderate impacts to vegetation communities and mature tree growth due to wider right of way platform
	Minimize impacts to wildlife	• Potential for minor impacts on wildlife due to a wider roadway platform • Potential for impacts to breeding birds		
	Minimize impacts to aquatic habitat	• Potential impacts to frogs and turtle species as they were identified on both sides of the road		
	Minimize impacts to surface and ground water	• Moderate impact with increased roadway width and hard surface area to accommodate additional lanes and active transportation facilities • Stormwater quantity will increase and quality mitigation may be required • Moderate impact to shallow groundwater system due to potential increase in contaminants related to increased roadway width		
	Minimize impacts to air quality	• Mitigation of impacts from increased traffic volumes by reducing potential congestion with the provision of additional lanes • Minor improvement to air quality through increased Transit frequency and provision of bus bays vehicles to reduce congestion • Active transportation and transit service improvements can reduce dependence on automobile and provide air quality improvements • Minor improvement in air quality on adjacent streets due to reduction in traffic diversion		

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	• Improvements with enhanced mode choice and decreased congestion can minimize effects on climate change • 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		
	Summary of Natural Environment Criteria	 Preferred	 Less Preferred	 Less Preferred
Infrastructure Design	Minimize utility relocation	• Moderate to Significant utility relocation anticipated to accommodate additional right-of-way	• Moderate utility relocation anticipated to accommodate additional right-of-way	• Moderate utility relocation anticipated to accommodate additional right-of-way
	Minimize property requirements	• Moderate property impacts	• Significant property impacts as some properties have to be fully acquired due to impacts	
	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	 Preferred	 Less Preferred	 Less Preferred
Cost Effectiveness	Minimize capital costs	• Moderate construction costs • Moderate property acquisition costs	• Moderate construction costs • Mayor property acquisition costs	• Moderate construction costs • Mayor property acquisition costs
	Minimize operating and maintenance costs	• Moderate increase in operating cost due to additional lanes and active transportation facilities		
	Minimize cost to implement known future projects	• Compatible with future densification		
	Summary of Cost Effectiveness Criteria	 Preferred	 Less Preferred	 Less Preferred
Recommendation		Recommended		

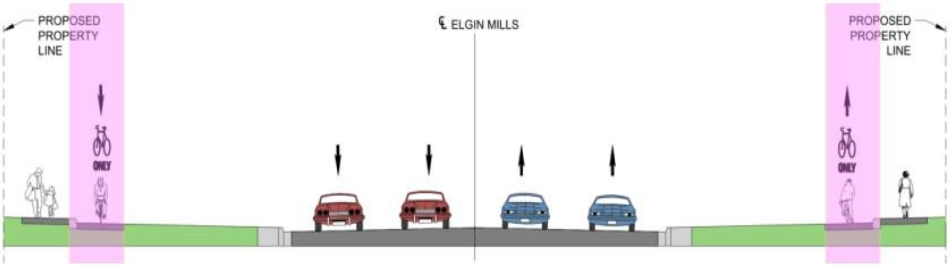
Attachment E: Active Transportation Alternatives



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	- Moderate impacts due to the required Right-of-Way. - Option to further reduce boulevards to minimize impacts at pinch points			
	Improve access to Existing properties	- Improve access to users of other modes of transportation - Improve access with added intersection traffic control and traffic capacity to reduce congestion - Uni-directional cycling facilities minimize potential conflicts with adjacent driveways and sidewalks based on expectation of the direction of travel for the cyclists	Access to cycling facilities from properties on one side of the road is Limited to	- Improve access to users of other modes of transportation - Improve access with added intersection traffic control and traffic capacity to reduce congestion - Uni-directional cycling facilities minimize potential conflicts with adjacent driveways and sidewalks based on expectation of the direction of travel for the cyclists	- Improve access to users of other modes of transportation - Improve access with added intersection traffic control and traffic capacity to reduce congestion
	Improve visual aesthetics and green spaces	Greatly Improved through the provision of planted boulevards and localized tree plantings			
	Improve community character	- Improved through the provision of active transportation and better transit facilities - Improved by better traffic flow			
	Preserve and/or enhance archaeological and cultural heritage features	- Some impacts due to the required Right-of-Way. - Option to further reduce boulevards to minimize impacts at pinch points			
	Minimize impacts to cemeteries and burial grounds	- Moderate Impacts to cemetery at McCowan Rd. - Possibility to avoid or mitigate these impacts with Asymmetrical widening and/or Boulevard reductions			
	Minimize traffic noise	Minor impacts as noise levels are expected to increase slightly because of additional lanes			

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	- Increased capacity to accommodate future traffic demand - Provision of active transportation facilities on both sides will further encourage use and increase active transportation use	- Increased capacity to accommodate future traffic demand - Provision of active transportation facilities on one side	- Increased capacity to accommodate future traffic demand - Provision of active transportation facilities on both sides will further encourage use and increase active transportation use	
	Support Transit improvements and operations	- Transit service will be enhanced with increased capacity and provision of bus stops - Conflicts between transit vehicles and users with cyclist at bus stops	- Transit service will be enhanced with increased capacity and provision of bus stops - Potential for conflicts between pedestrians wanting to access the bus stop from the sidewalk and cyclist - Access for cyclist to stops on the other side of the road is limited	- Transit service will be enhanced with increased capacity and provision of bus stops - Potential for conflicts between pedestrians wanting to access the bus stop from the sidewalk and cyclist	- Transit service will be enhanced with increased capacity and provision of bus stops - Potential for conflicts between pedestrians wanting to access the bus stop from the sidewalk and cyclist
	Provide connections to existing and future transportation networks (all modes)	- Connections to future networks and destinations on both sides of the road can be accommodated - Potential for longer travel distances due to inability to travel in the opposite direction	Connections to future networks and destinations on one sides of the road can be accommodated	- Connections to future networks and destinations on both sides of the road can be accommodated - Potential for longer travel distances due to inability to travel in the opposite direction	Connections to future networks and destinations on both sides of the road can be accommodated
	Accommodate users of all ages, abilities, and types of users	Greatly improves existing conditions by providing pedestrian and cycling facilities separated from vehicles			

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	- Separated facilities from vehicular traffic provides for safe facilities - Potential conflicts with turning vehicles at intersections if there is limited space to accommodate a safe design	Separated facilities from vehicular traffic provides for safe facilities		
	Provide for safe pedestrian facilities and minimizes conflicts with other modes of transportation	- Improved safety by provision of continuous pedestrian facilities - Separation from vehicles and from cyclist greatly reduces the potential for conflicts	- Improved safety by provision of continuous pedestrian facilities - Separation from vehicles and from cyclist greatly reduces the potential for conflicts	- Improved safety by provision of continuous pedestrian facilities - Separation from vehicles and from cyclist greatly reduces the potential for conflicts	- Improved safety by provision of continuous pedestrian facilities - Potential conflicts between pedestrians and cyclist due to shared facilities.
	Improve safety for vehicles	- Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts - Reduced conflicts as drivers expects cyclist to travel in one direction - Potential conflicts with turning vehicles at intersections if there is limited space to accommodate a safe design	- Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts - Potential conflicts with turning vehicles at intersections if there is limited space to accommodate a safe design	- Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts - Reduced conflicts as drivers expects cyclist to travel in one direction - Reduced conflicts with vehicles as crossrides are located in proximity with crosswalks	- Provide for consistent design features and separation of cyclist from drivers for reduction of potential conflicts - Reduced conflicts with vehicles as crossrides are located in proximity with crosswalks
	Summary of Transportation Service Criteria	 Less Preferred	 Less Preferred	 Preferred	 Preferred
Natural Environment	Protect Natural Areas	No difference between the different design solutions			
	Minimize impacts to Species at Risk	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)
	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			
	Summary of Natural Environment Criteria	 Preferred	 Preferred	 Preferred	 Preferred
Infrastructure Design	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			• Compliance with cycling standards • Multi-Use Paths are recommended for Rural Hamlet roads as per York Region's Design Great Streets Guidelines
	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	• Higher Construction Cost	• Less Construction Cost	• Higher Construction Cost	• Least construction cost
	Minimize operating and maintenance costs	• Higher operating and maintenance cost as separated facilities are more costly to maintain • More area to maintain	• Less operating and maintenance cost	• Higher operating and maintenance cost as separated facilities are more costly to maintain • More area to maintain	• Least maintenance cost
	Minimize cost to implement known future projects	• Compatible with future densification	• Less connections to future development on the opposite side	• Compatible with future densification	• Compatible with future densification
	Summary of Cost Effectiveness Criteria	 Least Preferred	 Less Preferred	 Least Preferred	 Preferred
Recommendation					Recommended