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Town of Aurora
Community Advisory Committee
No. CAC20-004

Subject: Pedestrian Grade Separated Crossings and Future Priority Crossings within Barrie GO Rail Corridor

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Department: Planning and Development Services

Date: September 17, 2020

Recommendation

- 1. That Report No. CAC20-004 be received for information.**

Executive Summary

In response to a June 2020 Notice of Motion, this report provides Council with information associated with potential pedestrian grade separated crossing and future crossing locations, identified in the Trails Master Plan along the Barrie GO rail corridor:

- Metrolinx will only consider grade separated pedestrian crossing (underpass or overpass) at Cousins Drive due to safety related concerns;
- Priority rating for the eight (8) pedestrian crossings along rail corridor identifies implementation challenges;
- Future capital costs associated with underpass construction will be significant due to Metrolinx track expansion of the Barrie GO corridor;
- The Town will need to complete an Environmental Assessment (EA) for the proposed crossings and a detailed design for the preferred alternative prior to construction; and,
- Pedestrian road crossings identified in Trails Master Plan require prioritization for capital planning and future funding.

Background

On June 23, 2020, staff received the following direction from Council:

1. Now Therefore Be It Hearby Resolved That staff provide a status report on all potential pedestrian crossings for non-motorized traffic along the train corridor to a General Committee meeting at the end of October; and
2. Be It Further Resolved That staff include in that report the priority crossings as identified in the Trails Master Plan and costing of detailed designs so that they may be included in the tender documents during the reconstruction by Metrolinx.

The November 2011 Trails Master Plan (TMP) is a long-term (50 year) plan with recommendations for a connected trails network, taking into account pedestrian/cycling infrastructure. The plan is a blueprint to guide the development of trails throughout Aurora in the short, medium and long term. Included in the plan are a number of rail and road crossings of the Barrie GO rail corridor that promote connectivity of the trails east to west within Aurora. Metrolinx approval was not required for the recommended crossings of the rail corridor listed in the Trails Master Plan because it was considered a planning study.

Previous Reports:

Staff have previously prepared Staff Report No. IES13-033 and the following were adopted by Council at its meeting on June 11, 2013:

1. THAT report IES13-033 be received; and
2. THAT Council not approve the construction of the Cousins Drive pedestrian crossing (Alternative to recommendation in report IES13-033).

Analysis

Metrolinx will only consider grade separated pedestrian crossing (underpass or overpass) at Cousins Drive due to safety related concerns

Trespassing on the railway tracks in the vicinity of Cousins Drive was identified as ongoing issue. In recent years, Metrolinx has erected a chain-link fence along its property boundaries from the Aurora GO Station to Engelhard Drive to prevent unregulated crossings of the railway corridor due to safety concerns.

A letter dated May 13, 2020, addressed to the CEO of Metrolinx, was sent from the Mayor's office in regards to pedestrian crossing options at Cousins Drive. Subsequently, a reply letter dated June 10, 2020 was received from Metrolinx with the following recommendations:

“While our teams are available to continue earlier discussions about safety measures that would need to be in place to explore alternative access, we are not prepared to discuss the reopening of the level crossing. Instead, we would be open to exploring an infrastructure solution that is not at-grade (e.g., a grade-separated overpass or underpass).”

A copy of the reply letter is provided in Attachment 2.

Grade separated crossings (overpass and underpass) are intended to support active transportation by providing route continuity and directness. In their absence, users may be forced to make long detours to cross a barrier.

A. Option 1: grade separated crossing – overpass

Generally, overpasses are preferable to underpasses from a user comfort and safety perspective. They benefit from natural lighting and allow users to see and be seen. However, they tend to require a greater change in elevation than underpasses.

The design and construction cost of a pedestrian overpass is estimated at \$5 million excluding any land acquisition cost which will be determined during detailed design stage.

B. Option 2: grade separated crossing – underpass

Underpasses are rectangular or vaulted structures that make it possible to cross a man-made barrier such as a railway.

The construction cost of tunneling under the railway tracks is estimated at \$8.7 million.

Table 1 summarizes the analysis of the above crossing options.

Table 1: Cousins Drive Crossing Options

Cousins Drive Crossing Option	Possible Challenges	*Construction Cost Estimate
Option 1: Overpass	<ul style="list-style-type: none">• Insufficient public right-of-way;• High construction cost; and,• Land acquisition cost is a major factor.	<ul style="list-style-type: none">• +/- \$5million
Option 2: Underpass	<ul style="list-style-type: none">• High construction cost;• May subject to flooding and maintenance concerns; and,• Safety and security concerns.	<ul style="list-style-type: none">• +/- \$8.7 million

* Cost estimates for an overpass and underpass pedestrian crossing were taken from Item 39, Report No. 29 (Pedestrian Linkage in West Woodbridge), of the Community of the Whole in the City of Vaughan adopted by Council at their meeting of June 26, 2012 and indexed to 2021 values.

Priority rating for the eight (8) pedestrian crossings along rail corridor identifies implementation challenges

The Trails Master Plan identifies a number of crossings along the Barrie GO rail corridor, categorizing them at grade, overpasses and underpasses. However, Metrolinx states in a letter to the Mayor dated June 10, 2020 that they would only entertain the possibility of formal grade separated crossings, which would mean overpasses or underpasses.

Parks staff have prioritized the eight (8) potential locations identifying associated benefits and challenges for discussion purposes and to illustrate that it is not only construction and engineering costs that is required for each crossing. In some cases, land acquisition and easements are necessary to facilitate the crossing. Attachment #1 provides a location map of the potential rail crossings and Attachment #2 prioritizes the areas.

Future capital costs associated with underpass construction will be significant due to Metrolinx track expansion of the Barrie GO rail corridor

The Trails Master Plan was completed in 2011 and incorporates an appendix with associated cost estimates for trail construction including, bridge, underpasses, etc.

Below grade railway crossings are described as 3 metre wide, unlit culvert style, approximately 10 metres long for a single elevated rail track with an associated cost estimate of \$500,000 - \$750,000. It should be noted that this estimate is from 2010,

based on similar southern Ontario projects and does not include property acquisition, utility relocations or major roadside drainage works.

Metrolinx is now planning for the expansion of the Barrie GO rail corridor to facilitate a double rail line to accommodate future growth in ridership. This double track construction is anticipated to potentially require 30 metres for the underpass. Based on the 2010 estimate within the Trails Master Plan an underpass of this length would require approximately \$2.8 million of funding in 2020. Additional costs for trail construction to connect to the underpass would need consideration.

Staff inquired with Metrolinx regarding recent cost estimates for construction of pedestrian underpass crossings of rail lines; however, they have not provided any data to date.

For the purposes of discussion staff have provided the following examples of underpass construction costs on roads:

1. Two (2) pedestrian underpasses are currently being constructed on Leslie Street in a 50% cost share partnership with the Region of York. Without the cost share, the construction for one (1) is \$1 million based on a 2016 tender pricing. Length of these underpasses are 35 – 40 meters. While the construction specification is potentially different, it is a current underpass installation cost; and,
2. A feasibility study undertaken through Parks, relating to the crossing of Wellington St E between John West Way and Bayview Ave in 2017-18. The study provided a preliminary estimated cost of \$3.3 million for a concrete underpass, 5 metre wide and 50 metres long, under the 4-lane road. In addition, an overpass option was presented with an estimated value of 10.3 million. Information was presented to the Trails and Active Transportation Committee in June 2018. A recommendation not to proceed with the project was adopted through the minutes by Council.

Based on the above underpass costs funding for project could be +/- \$3,000,000 capital costs to the Town in the future, not inclusive of trail costs.

The Town will need to complete an Environmental Assessment (EA) for the proposed crossings and a detailed design for the preferred alternative prior to construction

In addition to the estimated construction cost, the Town will need to retain a qualified engineering consulting firm to complete an Environmental Assessment following the EA process for the proposed crossings and a detailed design for the preferred alternative. The cost is estimated at \$200,000 per crossing or \$1.6 million for all eight (8) crossings.

Pedestrian road crossings also identified in Trails Master Plan require prioritization for capital planning and future funding.

Within the TMP a number of road crossings are also identified for pedestrian crossings. Many of these are long-term objectives and involve Regional roads. It is important that these crossings are prioritized for capital planning and funding, as costs will be significant and affect reserve health.

Staff will prepare a report identifying the crossings for Council consideration in 2021.

Legal Considerations

The Town is required to obtain permission from Metrolinx in order to implement any infrastructure crossing the Barrie GO rail corridor. Generally, such arrangements with Metrolinx entail an agreement that would place all the responsibility for the crossing and liability on the Town during the time of construction and its lifetime. If the Town requires any additional privately owned land in order to construct a crossing, land purchases would be negotiated with the property owners, or otherwise acquired through an expropriation process. If land is to be acquired from commercial owners, it should be noted that any potential business losses may have to be compensated in order to acquire/expropriate such land. Any agreements with Metrolinx and land acquisitions will have to be dealt with before any construction can be commenced.

Financial Implications

The total estimated cost to construct all 8 crossings is \$28.7 million for Option 1 (overpass at Cousins Drive) and \$32.4 million for Option 2 (underpass at Cousins Drive). Both of these cost estimates exclude any potential land acquisition costs. Details are provided in Table 2.

Table 2: Estimated Total Cost (EA Study and Detailed Design plus Construction Cost)

Pedestrian Crossing Locations	EA and Detailed Design Estimate	Construction Cost Estimate	Total Cost
Cousins Drive	+/- \$200,000	Option 1: +/- \$5,000,000 Option 2: +/- \$8,700,000	Option 1: +/- \$5,200,000 Option 2: +/- \$8,900,000
BG Properties (Cattle Crawl)	+/- \$200,000	+/- \$2,850,000	+/- \$3,050,000
Henderson Drive	+/- \$200,000	+/- \$2,850,000	+/- \$3,050,000
Jack Woods House Open Space	+/- \$200,000	+/- \$2,850,000	+/- \$3,050,000
Ontario Heritage Trust -Smith Property	+/- \$200,000	+/- \$2,850,000	+/- \$3,050,000
St. Andrews Golf Course	+/- \$200,000	+/- \$2,850,000	+/- \$3,050,000
Walton Drive	+/- \$200,000	+/- \$2,850,000	+/- \$3,050,000
St. John's Side Road	+/- \$200,000	+/- \$5,000,000	+/- \$5,200,000
Total Cost (EA and Detailed Design plus Construction Cost)			Option 1: +/- \$28,700,000 Option 2: +/- \$32,400,000

Minimal funding is currently available for this planned work as per the Town's current DC Study. Subject to historical service level and benefit to existing Town user constraints, the Town would be able recover more of these costs through its next DC Study which is scheduled for 2023. The funding for the remainder of these requirements would need to come from alternative sources such as the Growth & New Reserve which at present are under considerable competing pressures.

Communications Considerations

The Town of Aurora will use 'Inform' as the level of engagement for this project. There are five different levels of community engagement to consider, with each level providing the community more involvement in the decision making process. These levels are: Inform, Consult, Involve, Collaborate and Empower. Examples of each can be found in the Community Engagement Policy. These options are based on the International Association of Public Participation (IAP2) Spectrum and assist in establishing guidelines

for clearly communicating with our public and managing community engagement. In order to inform, this report will be posted to the Town's website.

Link to Strategic Plan

This report supports the Strategic Plan goal of Support an Exceptional Quality of Life for All by examining traffic patterns and identifying potential solutions to improve movement and safety at key intersections in the community.

Alternative(s) to the Recommendation

None.

Conclusions

Based on the letter received from Metrolinx, level crossing at Cousins Drive will not be permitted and only grade separated crossings can be considered. There are two options for grade separated crossings consisting of an overpass or an underpass. The estimated construction cost for a grade separated pedestrian crossing at Cousins Drive is \$5 million (excluding any land acquisition cost which will be determined during detailed design stage) for overpass and \$8.7 million for an underpass.

In addition to construction costs, the Town will require to retain a qualified external engineering consulting firm to complete an Environmental Assessment and a detailed design for the preferred alternative. The estimated cost is \$200,000 per crossing or \$1,600,000 for all eight (8) crossings.

The list of potential crossings from the Trails Master Plan identifies both the benefits and challenges for consideration, with the challenges being significant in some cases, as it involves land acquisition and considerable engineering to implement the crossing. A number of factors and unknowns exist with each location that may affect the practicality of all the potential crossings, which can only be identified through the detailed design stage.

Attachments

Attachment #1 – Map of Potential Railway Crossings per Trails Master Plan

Attachment #2 - Rail Crossing Priorities

Attachment #3 – Metrolinx May 13, 2020 Letter

Previous Reports

General Committee Report No. IES13-033, dated May 21, 2013; and,
Memo to Trails and Active Transportation Committee, dated May 17, 2013.

Pre-submission Review

Agenda Management Team review on September 3, 2020

Approvals

Approved by Allan D. Downey, Director of Operations, Operational Services

Approved by David Waters, Director, Planning and Development Services