



# MEMO

**TO** : Tareq Mahmood (Region of Peel)

**FROM** : Stephen Keen, David Hiatt (CIMA+)

**DATE** : Aug 09, 2021

**SUBJECT** : B000738 - Coleraine Drive CP Rail Grade Separation EA  
Ellwood Dr. and Grapevine Rd. Technical Memorandum

This memo details the impacts to the existing Ellwood Drive and Coleraine Drive intersection, due to two shortlisted design alternatives for the Coleraine Drive grade separation, identified as part of the ongoing Coleraine Drive CP Grade Separation EA.

## 1. INTRODUCTION

To date, the EA study has identified two alternative design concepts for the grade separation: Alternative 1: 'Road Under Rail' and Alternative 2: 'Road Over Rail' and is completing the evaluation of alternatives and preparing for Public Information Centre #2, at which the preferred design will be presented to the public. Both alternatives require the closure of the existing Old Ellwood Drive and Ellwood Drive West access points to Coleraine Drive. This will result in all locally generated traffic in the adjacent subdivisions having to access Coleraine Drive via Harvest Moon Drive (for the west side which is already the case) and only King Street for the east side.

There is some evidence that there is some Bolton generated traffic accessing Coleraine Drive via Old Ellwood, but this will be prevented in the future once both Ellwood accesses are removed, hence through traffic will be eliminated.

There leaves the question of how the termination of Ellwood and Old Ellwood Drive is to be treated? This memo details the impacts associated with several alternatives and outlines an assessment of the potential mitigation options available. The differing options and their assessment will be presented at Public Information Centre #2, in addition to the evaluation of the shortlisted design alternatives: Alternative 1: Road Under Rail and Alternative 2: Road Over Rail.

## 2. ALTERNATIVE 1: ROAD UNDER RAIL

Alternative 1: Road Under Rail includes submerging Coleraine Drive under the existing CP rail line. The rail line will be accommodated by a structure over Coleraine Drive. Due to the close location of the rail crossing to Ellwood Drive West, keeping an intersection of Coleraine Drive and Ellwood Drive west is not feasible. Also, due to the need for Coleraine Drive to tie back to grade before the Harvest Moon / King

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Street intersection to the north, the elevation difference of Coleraine Drive at Old Ellwood West is not sufficient to accommodate a direct crossing to Grapevine Road.

Therefore, the Coleraine Drive and Ellwood Drive West intersection is proposed to be closed and the road cul-de-sac'd. Following public input from PIC #1 and after consulting with the Region's Sustainable Transportation team, there is a desire to provide Active Transportation (AT) connections to/from Coleraine Drive. As a result of the above, only one feasible alternative is available:

- 1) Cul-de-sac Ellwood Drive West, and provide a connection for AT users only

Alternative 1 is detailed in **Figure 1**. This illustrates that a ramped AT connection will be maintained between the residential areas east and west of Coleraine Drive.

With no road connection being feasible, this has the disadvantage of leaving the residential area on the east side having only one access via Station Road; whereas previously this sub-division had three access points (two onto Coleraine Drive and one onto Station Road/King Street).

The lack of a second road access is a serious concern for residents of this sub-division, particularly from the perspective of a providing a secondary access for emergency service vehicles; should the singular access be blocked for any reason, there would be no way in or out of the subdivision. While Grapevine Road residents currently have one access only, it only has a little over 100 homes being served from that access. However, on the east side, there are close to 250 homes that would now be served by a singular access. This is a serious disadvantage to this grade-separation option as no secondary access appear to be feasible.

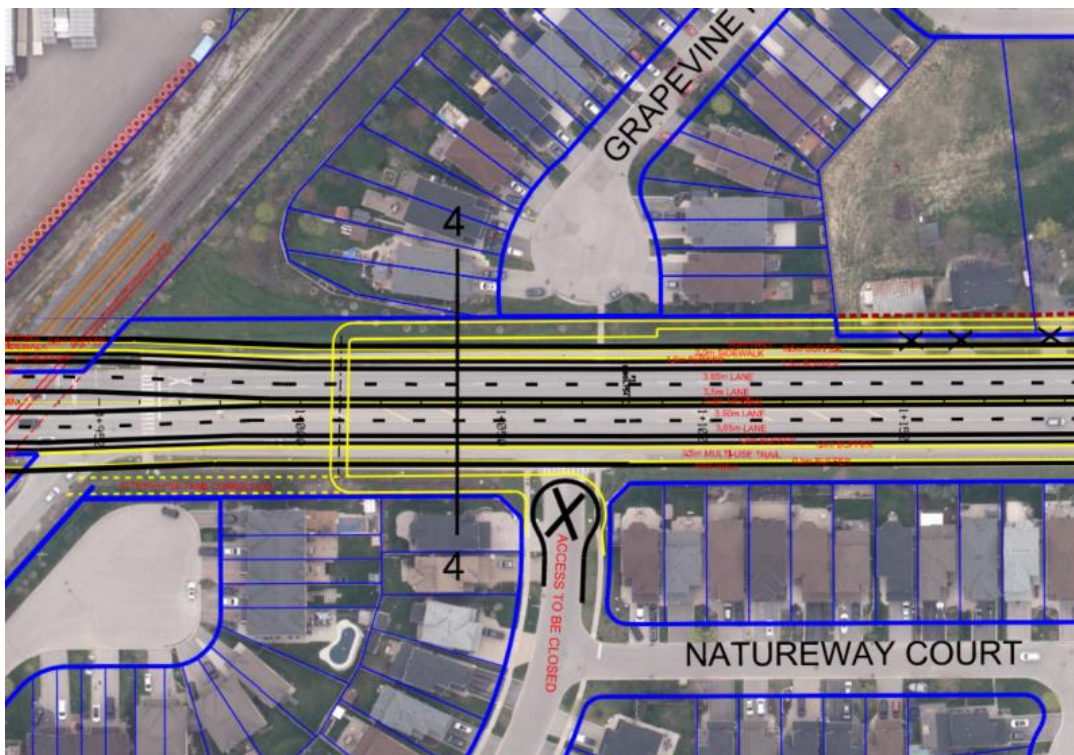


Figure 1: Ellwood Drive West at Coleraine Drive - Alternative 1

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To the knowledge of the project team, the Town and Region currently do not have any guidance on maximum length / maximum number of homes on a cul-de-sac. CIMA+ recently faced a similar situation with another project and conducted a literature review and jurisdictional scan on available guidance from other municipalities. The review found that while there are many policies across the country that deal with the designation of an emergency access route to buildings and the need to allow emergency vehicle access to a building, there are fewer policies setting out the need for a second (or more) access to a subdivision. Although in planning new subdivisions, a second access is almost always a practical consideration, yet in some instances topography and barriers are present preventing more than one access. Residential areas that have multiple access points allow emergency service vehicles to travel to an emergency with shorter average response times.

Policies and guidance from the following municipalities within Canada, and ITE, were reviewed for information regarding secondary or emergency access with respect to cul-de-sacs., and their recommendations are summarised in **Figure 2**.

- Town of Whitby
- City of Kingston
- Township of Centre Wellington
- City of Kitchener
- Haldimand County
- District of Coldstream (BC)

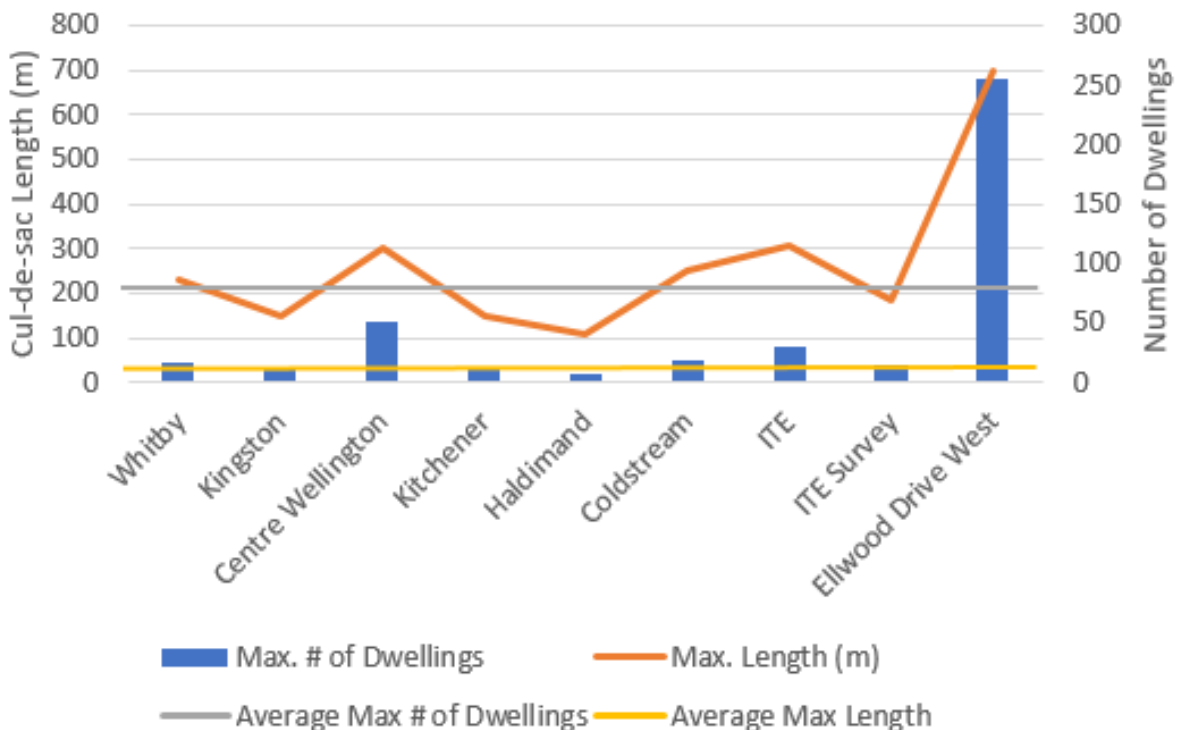


Figure 2 Single Access / Cul-de-sac Attributes - Jurisdictional Scan



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If Ellwood Drive West were to have a cul-de-sac, its length (approximately 700 m) and number of homes (around 250) far exceeds the average maximum length (209 m) and average maximum number of homes (20), identified through the jurisdictional scan.

### 3. ALTERNATIVE 2: ROAD OVER RAIL

Alternative 2: Road Over Rail involves raising Coleraine Road over CP Rail to a height of approximately 9.5 m above the original ground (7.5 m for rail clearance, 2 m for structure). To facilitate the raise, the north and south approaches will be constructed on fill and RSS walls will be used to minimise property impacts. Due to the close location of the rail crossing to Ellwood Drive West, keeping an intersection of Coleraine Drive and Ellwood Drive west is not feasible; however, due to the height required over the rail, there is sufficient clearance under Coleraine Drive at Ellwood Drive West to accommodate a direct connection between Ellwood Drive and Grapevine Road.

Also as stated previously, there is a desire to provide Active Transportation (AT) connections to/from Coleraine Drive, following public input from PIC #1 and after consulting with the Region's Sustainable Transportation team.

Therefore, there are two potential configuration options of Ellwood Drive West with Alternative 2:

- 1) Provide a direct roadway connection to Grapevine Road, accommodating vehicles and AT users; and
- 2) Cul-de-sac Ellwood Drive West and provide an AT connection only.

The above two options are illustrated in **Figure 3** and **Figure 4**, respectively.

As two options were identified for Alternative 2, a high-level assessment was conducted to identify their key advantages and disadvantages when compared against another.

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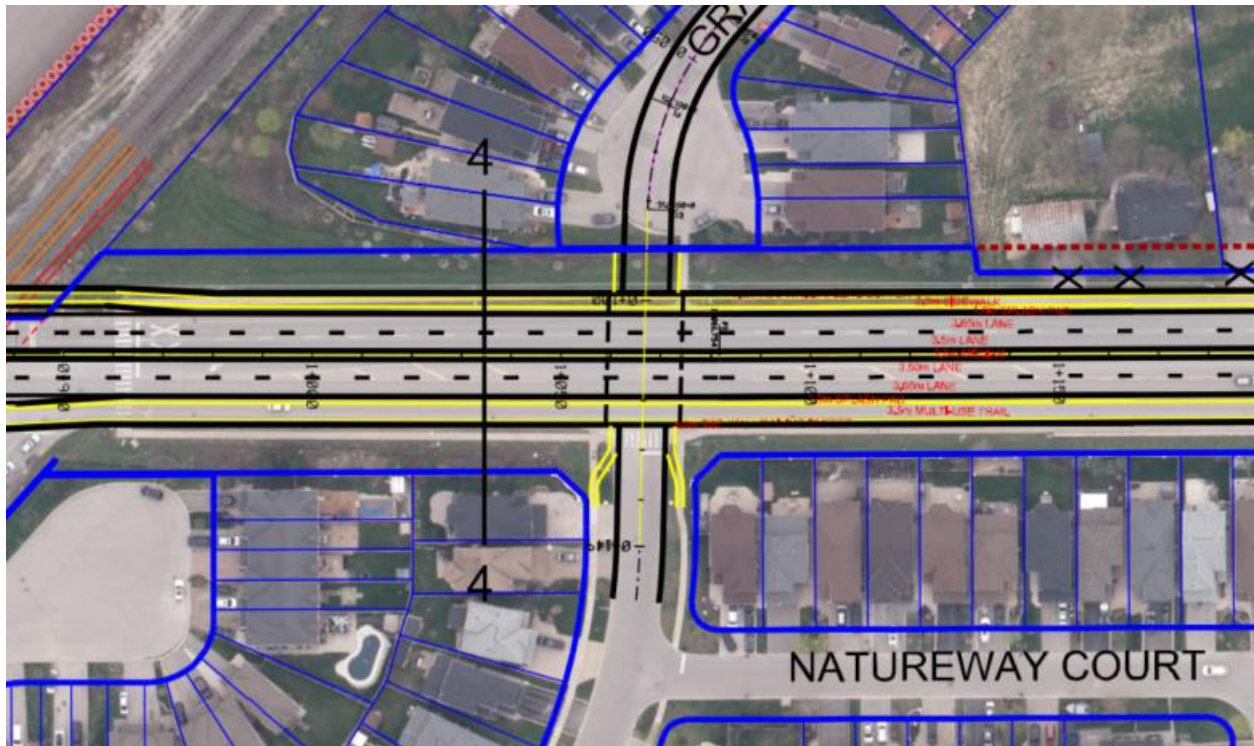


Figure 3 Ellwood Drive at Coleraine Drive - Alternative 2, Option 1 - Direct Roadway Connection

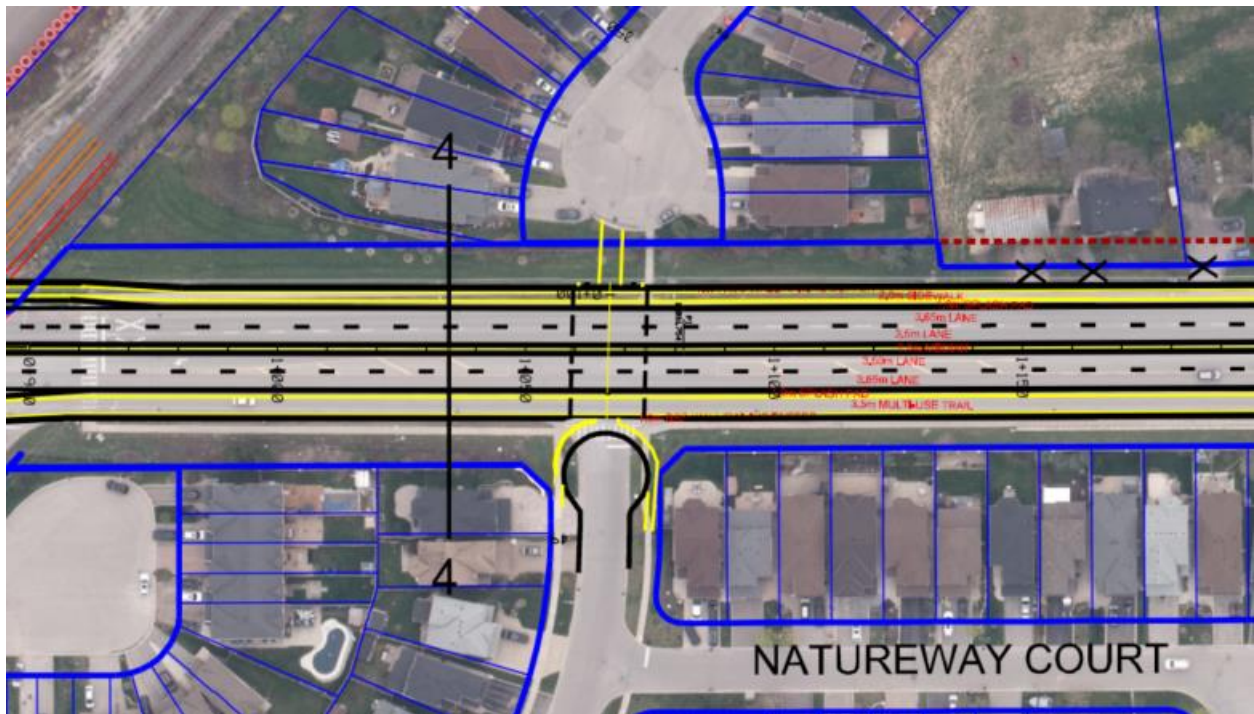
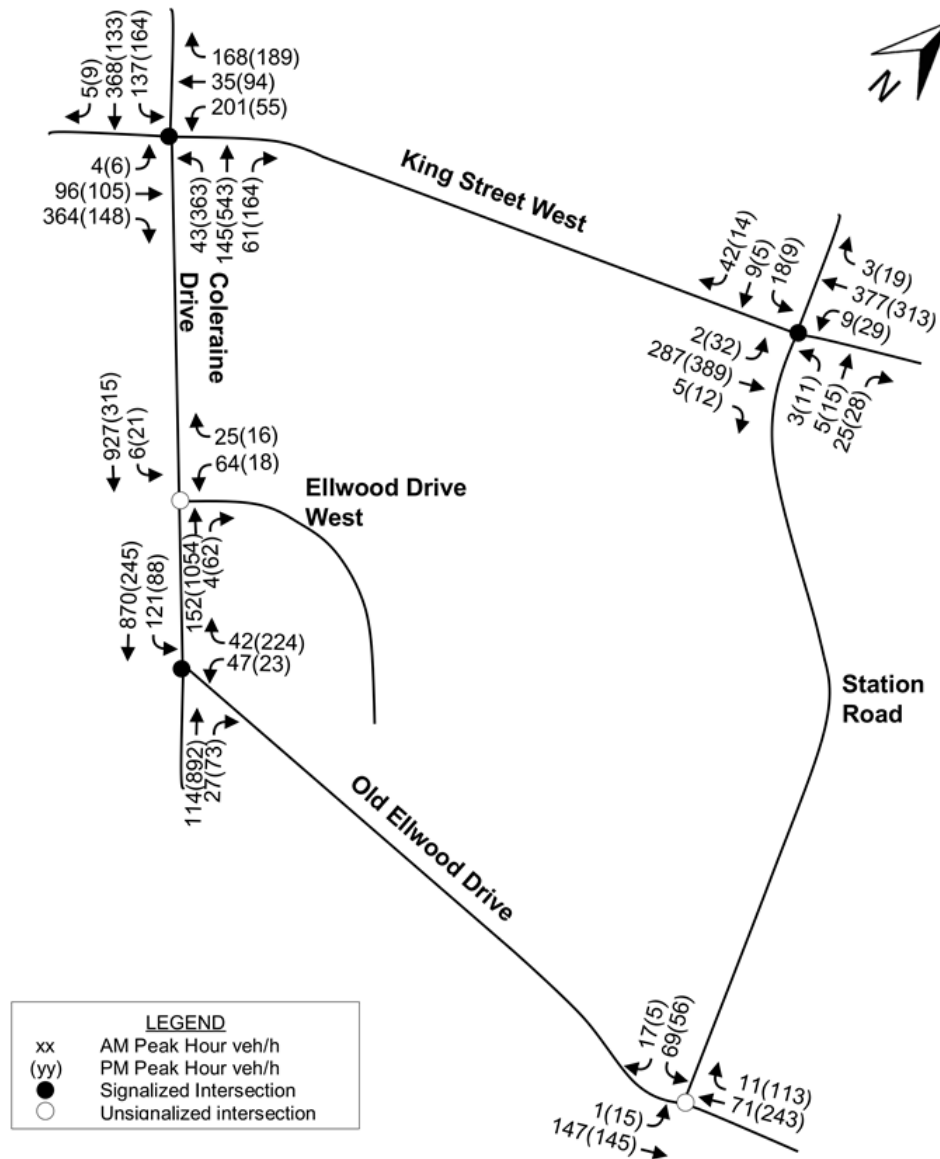


Figure 4 Ellwood Drive at Coleraine Drive - Alternative 2, Option 2 - Cul-de-sac + AT Connection

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### 3.1. Assessment of Options

The two Ellwood Drive options were assessed using the following criteria: Network Connectivity, Emergency Service Access, Traffic, Active Transportation (AT). The assessment compares the options against one-another and is detailed in **Table 1**.



Extract from previous Traffic Memo on Old Ellwood Drive closure options

As a foreword regarding Traffic, Ellwood Drive West integrates with Old Ellwood Drive to the east of Coleraine Road. The volume of traffic exiting and entering these two roads from Coleraine Drive are fairly insignificant (e.g., 24 to 64 vehicles in the peak hours), with the exception being turns from Old Ellwood Drive to and from the north (i.e., 224 NB in AM peak and 121 EB in the PM peak) – it can be

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 seen that with closure of access to Coleraine Drive, most of this traffic will have to divert to King Street  
 via Station Road.

### 3.1.1. Option 1

It should be noted that Option 1 reflects the original plans for the residential areas east and west of Coleraine Drive. In the Bolton Arterial Roads Individual Environmental Assessment (1990) undertaken by the Town of Caledon, the grade separation was planned as a ‘road over rail’ solution, with Grapevine Road and Ellwood Drive aligned to ultimately connect underneath the elevated grade separation.

Under Option 1, traffic volumes on Ellwood Drive would be similar to what they are today when considering some diversion from Old Ellwood to Ellwood with others diverting to Station Road.

Based on the traffic volumes shown in the above diagram, there is likely to be a portion of the 42+25 (AM peak hour) right-turning vehicles onto Coleraine Drive that might go through on Grapevine Road. The PM peak diversion is probably less than the AM peak once the through traffic is removed as discussed above. The volume of diverted traffic is considered minor and unlikely to result in any significant change on Ellwood Drive and this relatively minor impact on Grapevine Road is likely to be in the range of 25 to 30 vehicles during the peak hours. Should diverted traffic turn out to be more significant, then traffic calming could be used to prevent this happening.

### 3.1.2. Option 2

Under Option 2, all traffic conducting the east-to-north movement would be diverted to Station Road and use Station Road/King Street. Conversely, no impact would be felt on Grapevine Road.

With no road connection being feasible, as was the case for Alternative 1 (road under rail grade-separation) this has the disadvantage of leaving the ~ 250 homes in the residential area on the east side with only one access via Station Road; whereas previously this sub-division had three access points (two onto Coleraine Drive and one onto Station Road/King Street).

Again, the lack of a second road access is a serious concern for residents in this area, particularly from the perspective of a providing a secondary access for emergency service vehicles

**Table 1: Assessment of Alternative 2: Ellwood Drive West Options**

Criteria	Option 1: Direct Connection	Option 2: Cul-de-sac + AT
<b>Subdivision / Local Road Network</b>	Provides local residential road connection west, in-keeping with the original subdivision plans.	Coleraine Drive would act as a barrier to movement westerly. Option is not in-keeping with original subdivision plans. To cul-de-sac such a large subdivision (+200 homes) does not align with typical standards (jurisdictional scan identified average max. number of 20 homes on a single access)

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Criteria	Option 1: Direct Connection	Option 2: Cul-de-sac + AT
	✓	✗
<b>Emergency Services</b>	Ensures two points of access to the subdivision east of Coleraine Drive, better ensuring EMS vehicles can access in an emergency.	Limits access to one point: Station Road and Wakely Blvd intersection. Should this be blocked, EMS vehicles would not have access to over 200 residences
	✓	✗
<b>Traffic</b>	Minor increases of traffic volume on Grapevine Road (25 to 30 vehicles in the peak hour)	Significant increase in traffic on Station Road.
	✓	✗
<b>Active Transportation</b>	AT users are accommodated on road, in typical facilities. No dedicated structure required.	AT users are accommodated by dedicated structural culvert. Crossing will be narrower than Option 1.
	✓	✓
<b>Structural Requirement / Cost</b>	Greater structural requirements (overpass structure) and greater cost	Lesser structural requirements (structural culvert) and lesser cost
	✗	✓
<b>Overall Preference</b>	While Option 2 has the lesser cost, Option 1 is preferred from all other perspectives, particularly emergency access as well as it follows the original plan for the area.	
	✓	✗

#### 4. CONCLUSION

With Alternative 1: 'Road Under Rail' the single AT only connection for Ellwood Drive and Grapevine Road will be shown at PIC#2.

The assessment of the two options associated with Alternative 2: Road Over Rail identified Option 1: Direct Connection as being preferred and therefore will be included in the Road Over Rail drawings presented at PIC #2. However, both of the options and the above assessment will be presented to the public at the PIC for their input.