



**REGION OF WATERLOO**

**TRANSPORTATION AND ENVIRONMENTAL SERVICES  
Rapid Transit**

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**TO:** Chair Jim Wideman and Members of the Planning and Works Committee

**DATE:** September 10, 2013 **FILE CODE:** A02-30/PW

**SUBJECT: RECOMMENDED INTERCHANGE MODIFICATIONS AT NORTHFIELD DRIVE AND HIGHWAY 85**

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**RECOMMENDATION:**

THAT the Regional Municipality of Waterloo approve the recommended interchange modifications at Northfield Drive and Highway 85, as per Report E-13-110, dated September 10, 2013.

**REPORT:**

ION, the Region of Waterloo's rapid transit service, is moving forward, with construction starting in 2014 and operation beginning in 2017. As part of the early ION functional design, the Highway 85 interchanges at Northfield Drive were proposed as full-movement, signalized intersections. Since then, Regional staff have been working with the Ministry of Transportation of Ontario (MTO) to develop a design that will maintain access to/from Highway 85, provide safe and efficient traffic operations, accommodate active transportation and provide efficient ION service in the area.

A number of design variations for the Northfield Drive at Highway 85 interchanges were developed, considered, and evaluated. Based on those reviews by Regional staff, the following modifications on Northfield Drive at the Highway 85 interchanges are recommended:

- Convert the northbound and southbound Highway 85 interchanges at Northfield Drive to right-in and right-out only
- Convert the Kumpf Drive/Barta at Northfield Drive intersection to right-in and right-out only
- Provide a U-turn at the intersections of Northfield Drive/Parkside Drive and Northfield Drive/Colby Drive
- Accommodate cycling lanes, sidewalks, and pedestrian crossing facilities on Northfield Drive between the rail corridor and Colby Drive

Consultation with MTO, City of Waterloo staff, and Waterloo Fire Rescue has taken place and written support for these modifications has been received from all three groups. Staff will continue to work with these groups through future design phases.

**Reasons for the Modifications**

Operating under a signalized condition at the Highway 85 at Northfield Drive interchanges would degrade traffic operations at the ramps, therefore adversely affecting Highway 85 operations and creating safety concerns.

The proposed changes were evaluated based on the following criteria:

- Traffic operations of the Highway 85 at Northfield Drive interchange
- Traffic operations of Highway 85 mainline
- Traffic operations of the surrounding area
- Impacts to travel patterns
- Effective Light Rail Transit operations
- Effective Grand River Transit operations
- Accommodation of active transportation facilities

### **Evaluation of Impacts**

There will be minor travel pattern and traffic operations impacts as a result of the modifications. Transit operations and active transportation facilities will improve.

#### *Area Travel Patterns*

Left Turn from Northbound Highway 85 to Eastbound Northfield Drive:

This movement primarily serves trips coming from the south, in Waterloo or Kitchener, that are travelling to places such as the industrial areas along Northfield Drive or to RIM park. This movement is fairly light with 90 AM peak hour vehicles and 60 PM peak hour vehicles. The primary alternative for this movement is to exit at the King Street North and Highway 85 interchanges in Waterloo or Woolwich and travel via either King Street North or Bridge Street West. Due to the low volume of displaced trips, this closure is not expected to have a significant impact on traffic operations throughout the area.

Left Turn from Eastbound Northfield Drive to Northbound Highway 85:

This movement primarily serves trips coming from the west in Waterloo, such as Northlake or Lakeshore, that are travelling to points in the north such as St. Jacobs or Elmira. This movement is fairly light in the morning with 50 AM peak hour vehicles, and moderately busy in the evening with 130 PM peak hour vehicles. The primary alternative for this movement is to travel via Weber Street or Benjamin Road to the King Street North Highway 85 interchange in Woolwich. Due to the relatively low volume of displaced trips, this closure is not expected to have a significant impact on traffic operations throughout the area.

Left Turn from Southbound Highway 85 to Westbound Northfield Drive:

This movement primarily serves trips coming from the north, such as St. Jacobs or Elmira, that are travelling to points in the west, such as Northlake or Lakeshore. This movement is very light with only 30 AM peak hour vehicles and 20 PM peak hour vehicles. The primary alternative for this movement is to exit at the King Street North Highway 85 interchange in Woolwich and travel via either Weber Street or Benjamin Road. Due to the very low volume of displaced trips, this closure is not expected to have a significant impact on traffic operations throughout the area.

Left Turn from Westbound Northfield Drive to Southbound Highway 85:

This movement primarily serves trips coming from places such as the industrial areas along Northfield Drive or RIM park, that are travelling to points south in Waterloo or Kitchener. This movement is busy in the morning with 180 AM peak hour vehicles, and very busy in the evening with 400 PM peak hour vehicles. The primary alternative for this movement is to travel via either King Street North or Bridge Street West to the King Street North and Highway 85 interchanges in Waterloo or Woolwich. The opposite movement (southbound left) has a much lower traffic

volume which indicates that many of these trips are not for fixed regular travel, or have viable alternatives. Due to the high volume of displaced trips, it is expected that some impact will occur to area intersections. The greatest operational impact will be at the intersection at King Street North and Northfield Drive.

#### *Traffic Operations*

With the removal of all left turns at the Highway 85 interchange ramps at Northfield Drive, the level of service of the two ramps is expected to improve. In addition, it is expected that some trips currently turning left onto the Highway 85 interchanges at Northfield Drive will use the adjacent interchanges located at King Street North in Waterloo and in Woolwich. The level of service, at these interchanges, with these additional trips remains acceptable with most movements at a level of service "D" or better.

#### *ION Operations*

By eliminating two signalized intersections and four conflicting movements, ION will operate with reduced delays improving overall rapid transit travel times.

#### *Grand River Transit Operations*

By eliminating two signalized intersections from the Highway 85 interchanges, it is possible to include a pedestrian crossing facility adjacent to the rail corridor on Northfield Drive. This crossing will allow GRT stops to be located directly adjacent the Northfield Drive LRT station. This vastly improves GRT/LRT integration at this station.

#### *Accommodation of Active Transportation Facilities*

The elimination of the westbound and eastbound left turns leads to the elimination of their respective left turn lanes on Northfield Drive. These lanes traversed the bridge over Highway 85 and restricted the available cross section. With the removal of these left turn lanes it will be possible to provide bicycle lanes and sidewalks on the bridge. This closes a significant gap in the planned Regional and City of Waterloo active transportation networks.

#### *Waterloo Fire Rescue*

The existing access for the Waterloo Fire Station located on 150 Northfield Drive West will not be impacted. In addition, Waterloo Fire Rescue will have the following three options to continue to operate within existing standards with the removal of all left turns. First of all, fire trucks can turn left across the rapidway as the curb separating the rapidway from general traffic can be mounted by fire trucks. Next, fire trucks can use the rapidway for travel to avoid any potential congestion on Northfield Drive. Lastly, fire trucks can operate contra-flow in general traffic to avoid turning across the rapidway.

### **Public Consultation**

A Public Information Centre (PIC) to present these modifications was held on June 27, 2013.

Location: Albert McCormick Community Centre  
Address: 500 Parkside Drive, Waterloo  
Time: 4 p.m. to 8 p.m.

In advance of the PIC, letters were sent to property owners in the adjacent neighbourhoods in

the City of Waterloo. The letters, which were mailed out on June 14, 2013, invited them to participate in the PIC.

Newspaper advertisements promoting the PIC were included in the Waterloo Chronicle (June 19, 2013), Waterloo Region Record (June 21, 2013), and the Kitchener Post (June 21, 2013). Road signs advertising the PIC were posted from June 13-28, 2013.

Social media and the Rapid Transit website were also used to invite residents to participate in the PIC.

### Public Consultation Results

The PIC was well attended. In total, 37 residents and business owners participated in the PIC, with 16 submitting comments. A summary of the comments received is as follows:

- Support the modifications – 10 responses (62.5%)
- Against the modifications – 2 responses (12.5%)
- Suggested concerns with the modifications – 2 responses (12.5%)
- No statement of support or concern – 2 responses (12.5%)

A compilation of written comments received from the public is provided in Attachment B.

The following is a brief summary of the concerns raised by the participants and the recommended mitigation measures:

- **Traffic flow impacts as a result of the removal of left-turns:** The removal of left turns at the northbound and southbound Highway 85 interchanges will be mitigated by the provision of U-turns at the intersections of Northfield Drive/Colby Drive and Northfield Drive/Parkside Drive.
- **Complexity of U-turns:** U-turns will be appropriately signed and given advanced turn signals. The rapidway will act as a median and provides sufficient width (approximately 8 metres) to allow drivers to wait and make the U-turn comfortably.
- **Increased congestion:** Some movements currently occurring at the Northfield Drive Highway 85 interchanges will be displaced to the King Street North Waterloo and Woolwich Interchanges. There is sufficient road capacity to accommodate the displaced trips at these interchanges. The level of service at the Northfield Drive Interchanges is expected to improve.
- **Design and impact of future Northfield Drive development:** As part of the development approvals process, developers are required to submit Transportation Impact Studies and recommend mitigation efforts to ensure traffic operations remain within acceptable levels of service.
- **Location and design of active transportation facilities:** User-friendly active transportation facilities will be accommodated as appropriate within the available road allowance. Designs will be refined through the DBFOM procurement process and continuing discussions with MTO.

The project team also responded to questions and concerns at the PIC and will take the input into consideration as they continue to work with the Ministry of Transportation of Ontario (MTO).

### CORPORATE STRATEGIC PLAN:

The report supports Focus Area 3.1 of Council's Strategic Focus: Develop an implementation plan for light rail transit including corridor and station area planning.

**FINANCIAL IMPLICATIONS:**

In June 2011, Council approved the implementation of the RT project, including LRT and aBRT, with estimated capital costs of \$818 million, in 2014 dollars, with capital funding to be provided by the Province (up to \$300 million), the federal government (one third of eligible project costs to a maximum of \$265 million) and the Region (\$253 million). The RT project and improvements to conventional transit are financed through an annual tax rate increase of 1.5% for a period of 7 years.

The costs associated with the Northfield Drive at Highway 85 Interchange Modifications are contained within the DBFOM contract and will be included in that component of the overall project. Costing of this component will not be fully calculated until the RFP closes and the preferred proponent is selected.

**OTHER DEPARTMENT CONSULTATIONS/CONCURRENCE:**

Transportation Planning, Planning, Housing and Community Services

**ATTACHMENTS**

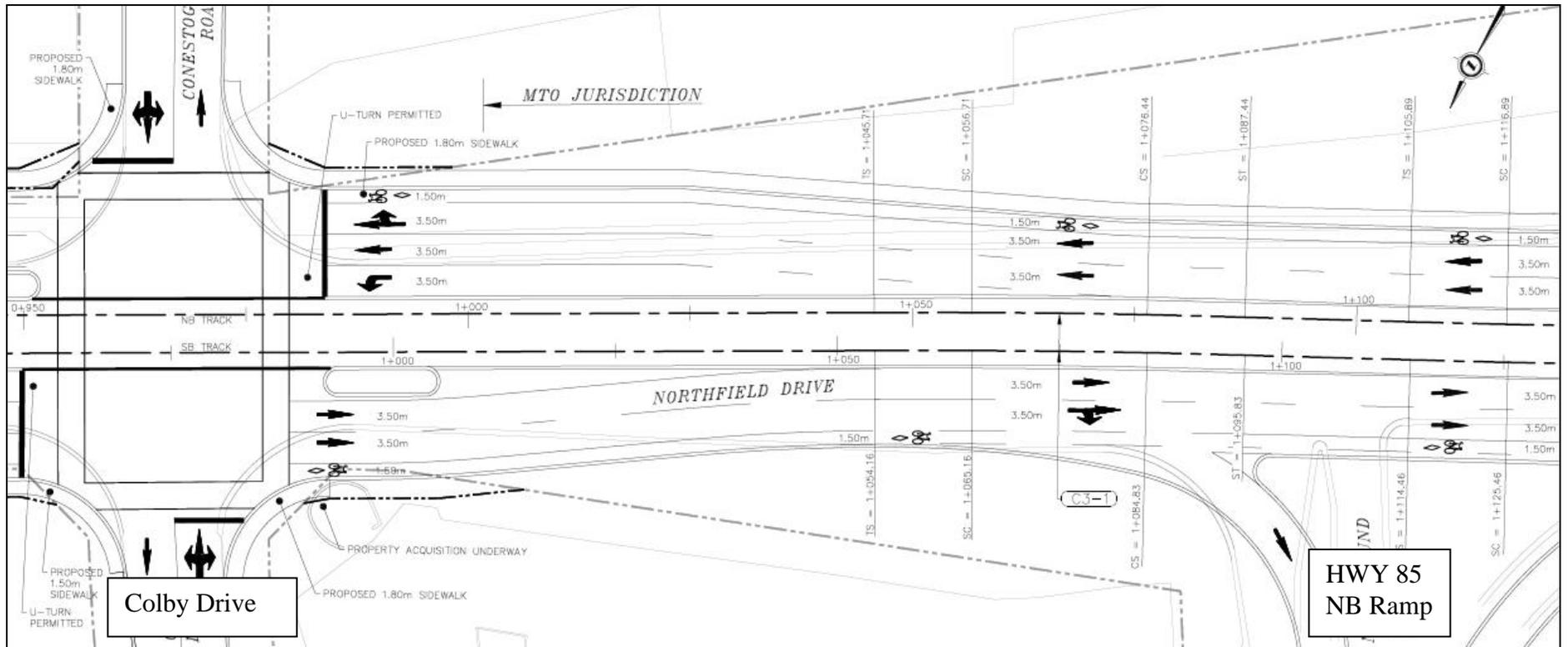
Attachment A – Northfield Drive at Highway 85 Interchange Modifications

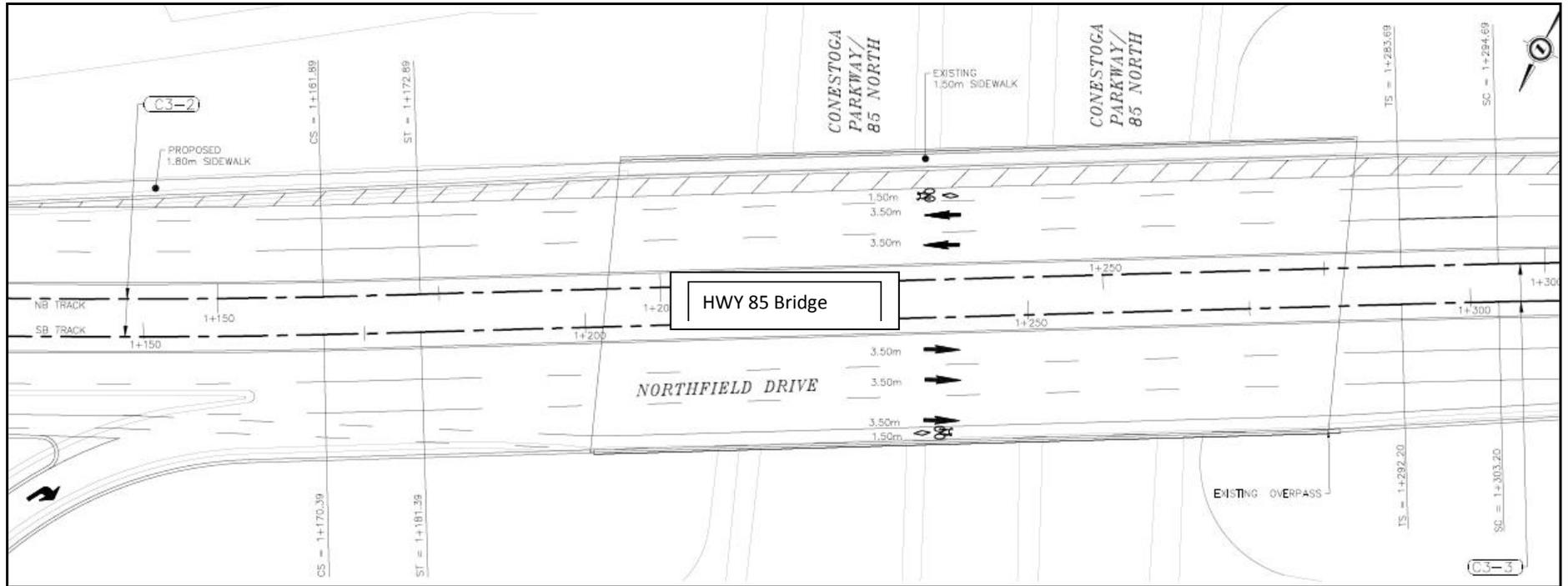
Attachment B – Summary of written comments submitted during PIC

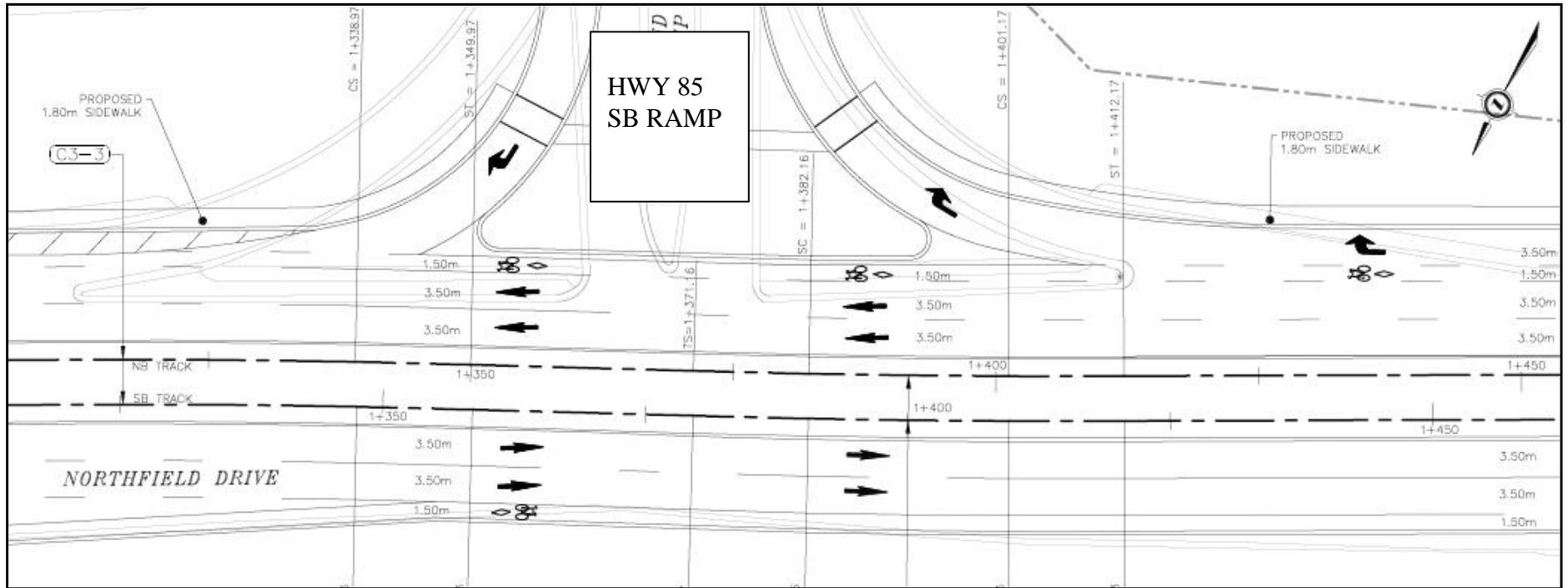
**PREPARED BY:** *Danielle Tobey*, Rapid Transit Planner  
*Masood Mirza*, Senior Project Manager, Rapid Transit Engineering

**APPROVED BY:** *Thomas Schmidt*, Commissioner, Transportation and Environmental Services











Record	City	Comments
1	Unknown	It would have been great to see some eye-level and aerial views similar to the LRT session at Knox on June 25. Both groups work for the Region, right? The developer of the NCR property needs to be watched more closely. No one is coordinating tourism related signs with the MTO. The sum of the individual parts of the collective planning efforts do not add up to the whole situation and all of the many details. Given the closeness of the NCR property - what the developer does or does not do will greatly impact the congestion on Northfield at Highway 85. Why wait until the pinch points get problematic?
2	Unknown	Does not impact our business Ultra Mtg
3	Waterloo	Good to see ION focus for terminal two stations, proper treatment required to get uptake in employment areas with appropriate bus and active transit connections. 400 peak rush hour car impact = 2-3 full LRT vehicles. Public may nonetheless push for new ramps as U-turn use is tricky (if not properly handled) and new for our area. Pedestrian AND CYCLING facilities (including intersections) is key for ION and active transit future growth, DO NOT COMPROMISE THEM for the sake of single occupancy.
4	Waterloo	Elimination of left hand turns at expressway not practical - will significantly alter traffic flow on Northfield and cause additional congestion at other interchanges. Re-think pedestrian and bicycle access to one side to continue left hand turns
5	Unknown	I really like that the current temporary lights on the overpass won't be permanent. I especially look forward to there being better accommodation to cross the expressway for cyclists and pedestrians. Thank you for this and I look forward to seeing the next stage.
6	St. Jacobs	Great idea
7	Waterloo	The LRT will be of no interest or use for us
8	Waterloo	I look forward to a bike ride down Northfield that isn't utterly terrifying. I fully support any change that helps the efficient flow of the LRT and its thousands of passengers
9	Unknown	This is quite a mess. The alternative route 85 southbound is terrible.
10	Kitchener	Clear signage for alternative routes is required. Strongly supportive of bike lanes along Northfield
11	Kitchener	The protection of cyclists on the Northfield corridor is crucial.
12	Kitchener	Ensure sufficient pedestrian crossing at RT ROW. Decrease merge angle at highway to reduce speeds at ramps to ensure cyclist and pedestrian safety. Make sure bike lanes are installed on Northfield.
13	Unknown	A U-turn is not my favourite manuver. I would probably avoid it. Clearly marked signs indicating the alternative routes would be very appreciated. Also, room for bike lanes or multi-use trails is important as well.

14	Waterloo	<p>It has come to my attention that there is a proposal on the table to remove the left-turn lane from Northfield Dr. On the highway overpass and replace it with bike lanes as part of the development of the new Northfield LRT station in north Waterloo. I strongly support this proposal. I have been told that there is some opposition to this proposal and that I should alert the powers that be of my support for it. I do not know to whom I should direct these comments, hence this message. I humbly request that you direct me to the proper place and/or pass along my support to those who need to hear it. Thanks for your consideration. I am an owner-occupier and part of a family of four who live at 404 Lakeview Dr., Waterloo N2L4Z6. Our family uses that overpass very frequently by both car and bike (sometimes with our children in tow!). That overpass is currently very dangerous for cyclists and I would very much like to see bike lanes on it. Moreover, the need for bike lanes will become more desperate when the Northfield LRT station comes into service.</p>
15	Unknown	<p>Thank you for the public meeting of last Thursday concerning modifications to Northfield Drive around the Highway 85 interchange. Overall, I am supportive of the changes and pleased to see that the simple solution of simply disallowing left turns was considered. In thinking about the area, I've realized an unorthodox solution to the problem of providing good pedestrian mobility through the area. Briefly, rather than sidewalks on both sides of the street, instead there should be a "centrewalk" (for want of a better term) right down the middle. So from north to south, the bridge would carry:- Northfield Drive Westbound - LRT Westbound (Southbound to Fairview) - "centrewalk" - LRT Eastbound (Northbound to Conestoga) - Northfield Drive Eastbound. The pedestrian centrewalk would be completely uninterrupted from where the LRT curves onto Northfield over to the intersection with Colby/Conestogo. At each end it could be accessed by signalized crossings - part of the Northfield/Colby/Conestogo intersection at the East end, and at the rail crossing at the West end. Although this may seem like extra crossing - in particular, pedestrians would have to cross half of Northfield twice in order to just walk along Northfield - consider the comparison: Standard sidewalk: narrow, immediately next to high speed, frequent road traffic; must cross four right turns; path will divert slightly from straight in order to cross right turns. Centrewalk: wider due to having just one combined instead of one on each side of the road; immediately next to LRT lanes which provide a buffer against loud and dangerous road traffic (LRT won't jump the kerb); no crossings except for signalized crossings at either end; path will be absolutely straight and uninterrupted. If necessary/desireable LRT could have a railing separating it from pedestrian traffic. Note that there are absolutely no pedestrian destinations along either side of Northfield between Kumpf/Barta and Colby/Conestogo; Kumpf/Barta are close enough to the rail crossing that a signalized intersection at the rail crossing can provide convenient access to that road/driveway. I'd be interested in your thoughts on this idea. I'm convinced that any issues can be dealt with in detailed design.</p>

16	Unknown	<p>Nice to have PIC located close to the area in question, could have had better exterior signage though. - Comment sheets need e-mail address, fax numbers or ways to follow-up if you didn't have time to fill out the form onsite. - Information boards were helpful and so were staff. - Plans to close some of these turning lanes on Northfield Drive are quite dramatic. Given that signals have just been installed at some of these intersections why couldn't they just be left as signalized intersections? - Main issue for me isn't so much road access in the area - it is access to the LRT. Being a rural resident, where am I going to park to get on the LRT? The Northfield Station has one of the highest potentials to lure people onto the Rapid Transit network due to its proximity to the Lakeshore, Beechwood, Laurelwood, Columbia Forest, and Conservation Drive neighbourhoods - each with thousands of residents. Local bus routes are weak and as GO Train stations have consistently proven, when provided with convenient, affordable parking people will gladly drive or cycle the first kilometer or two and then take rail transit into the core areas. Personally, I am a rural resident and the opportunity for residents of St. Jacobs, Elmira, St. Clements, Hiedelberg, Linwood, Bamberg, Hawkesville, Wellesley, etc. to use this station as their entranceway to the cities is huge. Much the same way so many Waterloo folks park at Yorkdale Mall and take the TTC Subway downtown because they don't like to drive in the city, the same potential exists here at Northfield Station. In fact, given the large Mennonite population in the surrounding area who need easy ways to get to the hospital and around the cities the Northfield LRT Station should include (like most area businesses including Sobey's, Home Depot, Conestoga Mall, etc.) a driving shed for horse and buggy parking - something that would be truly unique in the world of rapid transit stations but also guaranteed to be heavily used at this station! This station is also one of the closest to the huge St. Jacob's Farmer's Market and the need/potential to address the thousands of daily visitors to the market just a kilometer or so away needs to be addressed. As well, with the Expressway exits and off ramps located so close to the Northfield Station the unique opportunity and the ability to link the LRT to Expressway users is significant. The full to capacity Carpool areas along major highways across the province attest to the success of connecting people and changing driving habits if the opportunity is presented to them. There is a huge potential here to link the LRT to the tens of thousands of daily Expressway users.</p> <p>The TTC has done a fabulous job with their Kiss'N'Ride systems at key subway stations such as Finch Station where significant ridership begins or ends their journey, need to carpool, be picked up/dropped off, etc. If we are going to truly be successful at luring people out of their cars and onto the Rapid Transit system to build ridership we are going to have to do more than just build some platforms along the route. Key transit stations such as Northfield Station are going to have to include enhanced facilities such as parking, passenger pickup/drop off areas, driving sheds, extensive bicycle parking (perhaps even covered and secure), etc. This is not a station that many people will walk to however, thousands of people live within just a couple of kilometers - often with few other transportation choices in the area. If we want ridership we are going to have to do more than provide some iXpress Bus Routes. GO Transit has had learn the hard way, and has proven that there is a significant demographic that will take transit but demands the convenience - or if one lives in Wellesley - the necessity of driving to the transit station to access the network. There is an immediate opportunity to work</p>
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		<p>with the developers of two massive developments adjacent to the Northfield Station currently in the planning stages and underdevelopment to develop these enhanced station features and amenities. The window is rapidly closing though as they seek final approvals. The Region needs to work with these developers to see what might be possible to addressing the needs outlined above in a win-win-win manner as this station could be one of the Region's biggest assets/opportunities to lure people out of their cars and onto the Rapid Transit network. However, if nothing happens and the station is nothing more than a cement platform isolated in an industrial park/auto dealerships it will be one of the biggest lost opportunities in the Region and thousands of people will likely continue to commute about in their cars having little other viable choice from this part of the Region.</p>
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