



Report: TES-RTS-17-01

Region of Waterloo

Transportation and Environmental Services

Rapid Transit

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: February 14, 2017 **File Code:** D10-40/TPAS2

Subject: Stage 2 ION: Light Rail Transit from Kitchener to Cambridge – Public Consultation Centre No. 2 – Preliminary Preferred Route Alternative

Recommendation: For information

Summary:

In June 2011, the Stage 2 Light Rail Transit (from Kitchener to Cambridge) alignment/stop locations were endorsed by Council as part of the initial work done on Stage 1 Light Rail Transit (LRT). To proceed with Stage 2 LRT, an Environmental screening must be completed through the Transit Project Assessment (TPA) Process. The pre-planning activities for the TPA Process are underway and the schedule for TPA completion is proposed for early 2018. The completion date is preliminary and the final schedule will depend on the type of challenges and opportunities found over the next three to six months. The public will continue to be asked for their feedback prior to and throughout the TPA Process. The first set of public consultation events were held at the end of 2015. At these events, the public was asked for feedback regarding the alternative routes and the evaluation criteria to use to select the preferred alternative. The second set of public consultation events are now planned for February/March 2017. The purpose of the second public consultation centres will be to present the short-listed route alternatives, explain how the alternative routes were compared, and to present and hear feedback on the preliminary preferred Stage 2 LRT Route (Attachment 1).

Report:

1. Background

In 2006, Regional Council approved rapid transit as the preferred transportation strategy for Waterloo Region as part of Phase 1 of the Rapid Transit Environmental Assessment.

Rapid transit was embedded in the 2009 Regional Official Plan (ROP), providing a legal framework that required a transportation solution to manage growth (New ROP approved in early 2015). In June 2011, the Stage 2 LRT (from Kitchener to Cambridge) alignment/stop locations was endorsed by Regional Council as part of the initial work done on the Stage 1 LRT (Attachment 2).

2. Stage 2 LRT – Kitchener to Cambridge Study Process and Structure

A technical team is guiding the project with oversight by the established Rapid Transit Steering Committee which includes Region Chair Ken Seiling, and Councillors Tom Galloway, Sean Strickland, Geoff Lorentz and Karl Kiefer. The technical team is being assisted by WSP Parsons Brinckerhoff and is comprised of staff from the Region of Waterloo, City of Cambridge, City of Kitchener, Grand River Conservation Authority and the Ministry of Transportation.

To progress with Stage 2 LRT, an Environmental Assessment study must be completed. This study was completed for Stage 1 LRT. There is a special process for Transit projects called the Transit Project Assessment (TPA) Process. The TPA Process is part of the provincial approvals required to implement Stage 2 LRT. The process can start once a preferred project has been identified and approved by Regional Council. The process is intended to ensure that any impacts of “provincial significance” are properly managed. This process includes opportunities for public involvement and input.

The TPA Process also incorporates all of the planning, engineering, and technical studies and analysis which have already been completed or are currently on-going. The process starts with a selected transit project. The Transit Project Assessment is a streamlined process, approved by the Province under the Environmental Assessment Act, specifically for transit initiatives. The TPA regulation provides a framework for focused consultation and objection processes. The Minister of Environment and Climate Change may give notice allowing a proponent to proceed with its transit project, but can only take action if there is a potential for a negative impact on a matter of provincial importance that relates to the natural environment or has cultural heritage value of interest, or on a constitutionally protected Aboriginal or treaty right.

3. Public Consultation Plan

Before the official TPA Process begins, there will be ongoing meetings with key stakeholders and three formal public consultation events. The official TPA Process has specific consultation requirements that will be met. There will be in-person meetings, web activities along with ongoing social media outreach as is typical of the rapid transit approach to date.

The first public consultation centre was held at the end of 2015 to ask the public for their feedback on the alternative alignments and the evaluation criteria that will be used to confirm a preferred alternative.

A few of the main points from the public were;

- Respect the heritage in Cambridge
- Include a stop at Preston
- Avoid Eagle/Pinebush/Hespeler intersection
- Have tracks at the median, not curb on Hespeler Rd
- Minimize conflicts with Canadian Pacific and expensive grade separations
- Minimize interference with wetlands and rivers
- Serve employment lands and the airport
- Integrate with future GO stations
- Avoid the Delta, Water and Ainslie Streets

The feedback from the first public consultation centre was used along with specific criteria to evaluate the short listed alternatives.

The public notice, which was sent to all of the property owners along the preliminary preferred route, is shown in Attachment 3. The detailed public information package is included in Attachment 4. The meetings will take place at the time and location below:

Date	Time	Location
February 23, 2017	4-8 p.m.	Lions Arena 20 Rittenhouse Road, Kitchener
February 28, 2017	4-8 p.m.	Kin Club of Cambridge, 1400 Hamilton Street, Cambridge
March 1, 2017	2-8 p.m.	Newfoundland Club 1500 Dunbar Road, Cambridge

Display boards will be presented covering the following topics:

- Project purpose, study timeline, project team
- Purpose of the Public Consultation Centre
- Summary of Public Consultation Centre No. 1 feedback
- Updated route alternative maps
- Evaluation process and results by segment
- Preliminary preferred segment by area
- Overall preliminary preferred route
- Next steps and upcoming activities

4. Next Steps and Schedule (2017 - 2018)

- February 2017 – Second Public Consultation – to present the preliminary preferred route, evaluation, impacts and proposed mitigation
- September 2017 – Third Public Consultation – to present the preliminary design of the preferred route
- Fall 2017 - Preferred route presented to Regional Council for endorsement
- Fall 2017 – Business Case completion
- Late 2017 – Commence TPA Process
- Early 2018 – Completion of TPA Process

Corporate Strategic Plan:

Stage 2 ION: LRT Kitchener to Cambridge supports the Council Strategic Area:

Sustainable Transportation: 2.1 Create a public transportation network that is integrated, accessible, affordable and sustainable.

Objective 2.1.3 Complete the Environmental Assessment for ION Stage 2 and pursue funding from the Federal and Provincial governments.

Financial Implications:

The 2017 capital plan includes \$1 million in 2017 and \$1.44 million in 2018 to undertake the Stage 2 ION Light Rail Transit TPA Process work. This project will be funded by property tax contributions to the RTMP Reserve.

Other Department Consultations/Concurrence:

Regional staff from Planning, Development and Legislative Services has been consulted along with staff from the Cities of Cambridge and Kitchener, Grand River Conservation Authority and the Ministry of Transportation.

Attachments

Attachment 1: Preliminary Preferred Route Map

Attachment 2: Map of Council Endorsed Stage 2 Rapid Transit (LRT) – 2011

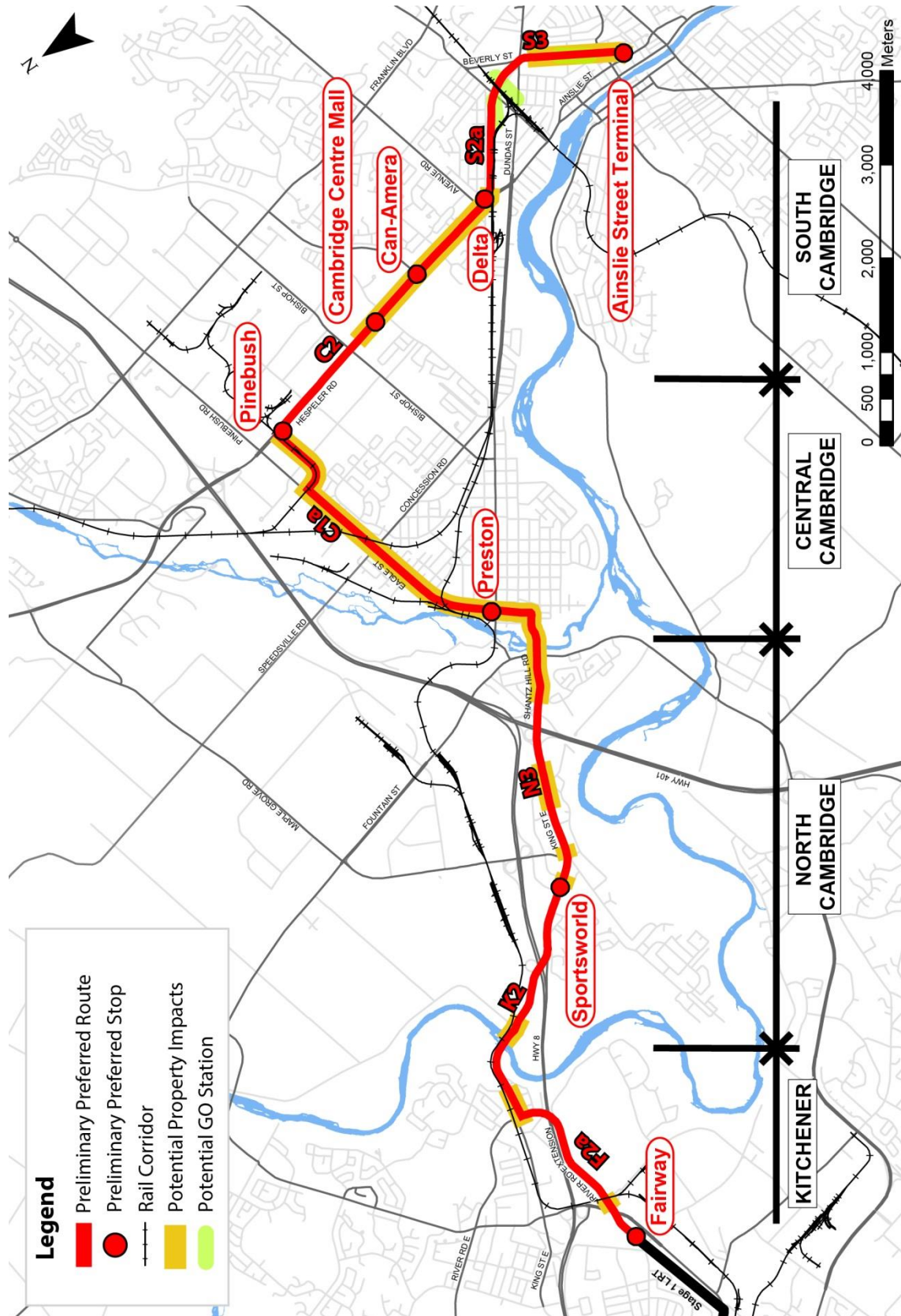
Attachment 3: Public Consultation Centre Notice

Attachment 4: Public Information Handout

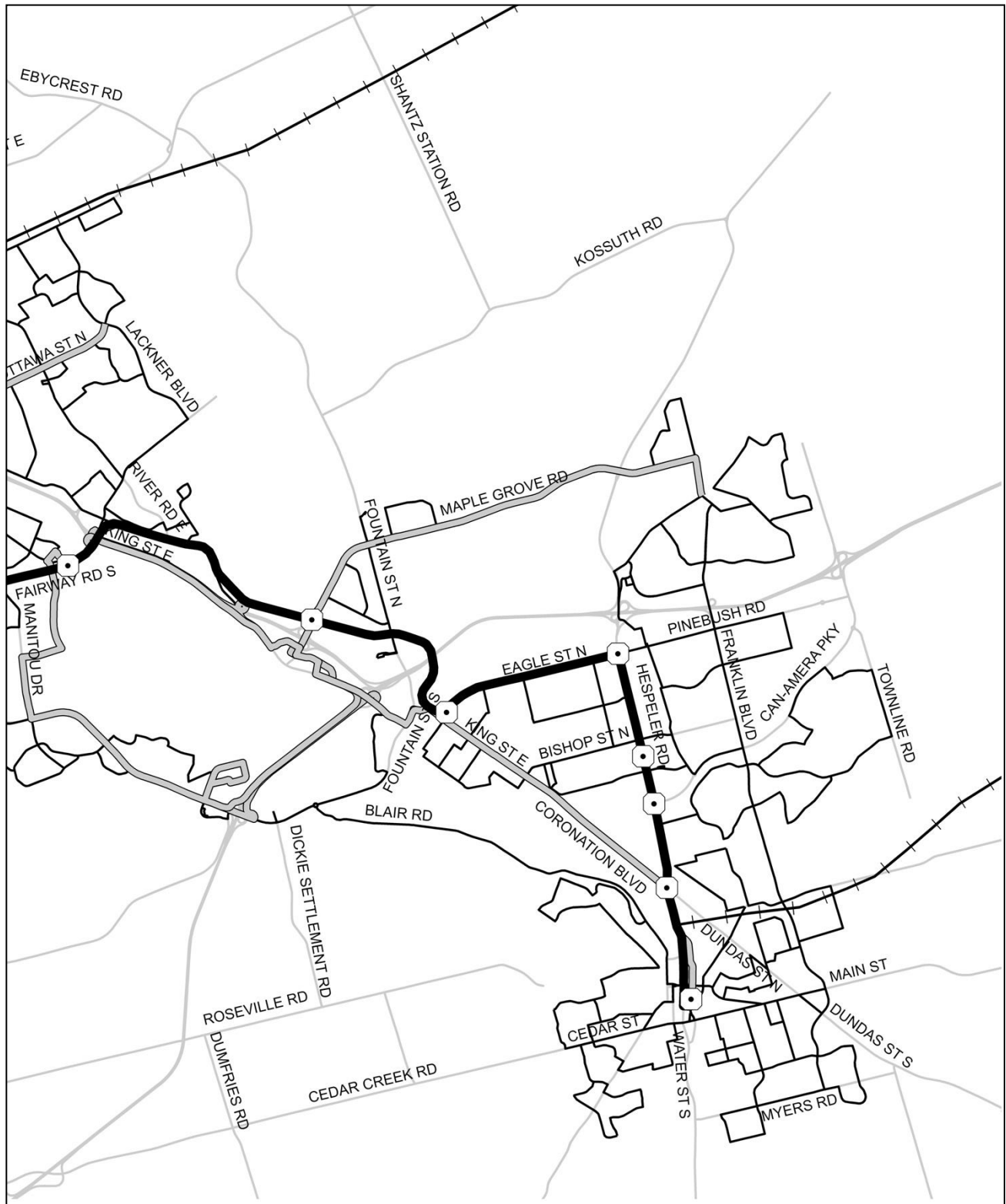
Prepared By: Paula Sawicki, Manager, RT Coordination

Approved By: Thomas Schmidt, Commissioner, Transportation and Environmental Services

Attachment 1: Preliminary Preferred Route Map



Attachment 2: Map of Council Endorsed Stage 2 Rapid Transit (LRT) – 2011



Attachment 3: Notice for Public Consultation Centre No. 2

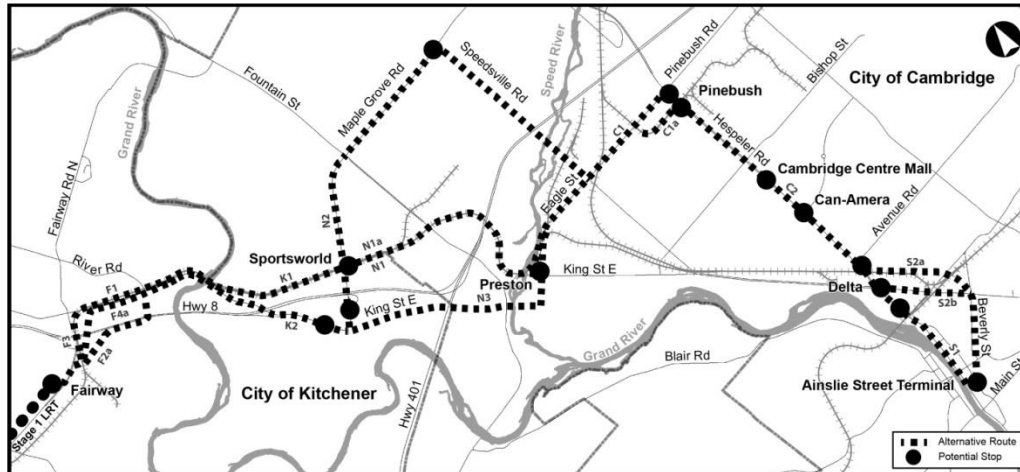
Notice of Public Consultation Centre No. 2



Stage 2 ION: LRT from Kitchener to Cambridge

In June 2011, Region of Waterloo Council approved a staged approach to Light Rail Transit (LRT). Stage 1 ION (currently under construction) includes LRT from Kitchener to Waterloo and Bus Rapid Transit (BRT) between Cambridge and Kitchener (launched in September 2015). Stage 2 ION will see BRT replaced by LRT. The first Public Consultation Centres introduced various route options under consideration along with the criteria to be used during the evaluation process. At Public Consultation Centre No. 2 the evaluation process and results, along with the preliminary preferred route will be presented for input.

The set of updated route alternatives are shown below:



Date	Time	Location
February 23, 2017	4-8 p.m.	Lions Arena 20 Rittenhouse Road, Kitchener
February 28, 2017	4-8 p.m.	Kin Club of Cambridge, 1400 Hamilton Street, Cambridge
March 1, 2017	2-8 p.m.	Newfoundland Club 1500 Dunbar Road, Cambridge

The environmental impact of this transit project will be assessed in accordance with the Transit Project Assessment (TPA) Process as outlined in Ontario Regulation 231/08. As part of the TPA, an Environmental Project Report will be prepared and will be available for public review in 2017. All information on Stage 1 and 2 ION is available at www.stage2ION.ca, and from the Region’s Administrative Headquarters located at 150 Frederick Street, Kitchener.

Under the *Freedom of Information and Protection of Privacy Act* and the *Environmental Assessment Act*, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this matter and will be released, if requested, to any person.

Attachment 4 – Public Information Package

Stage 2 ION:
Light Rail Transit (LRT)
from Kitchener to Cambridge

Public Consultation Centre No. 2
Kitchener Lions Arena, February 23, 4 – 8 p.m.
Kin Club of Cambridge, February 28, 4 – 8 p.m.
Newfoundland Club, March 1, 2 – 8 p.m.

Public Information Package





February 2017



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Appendices:

- Appendix A: Route maps by segment
- Appendix B: Evaluation results

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| <ul style="list-style-type: none"> • ION project website: regionofwaterloo.ca/rapidtransit • Phone: 519-575-4400 ext. 3095 • TTY: 519-575-4608 • Email: rtinfo@regionofwaterloo.ca | <ul style="list-style-type: none"> • Stage 2 website: www.stage2ION.ca • facebook.com/rideION • @rideIONrt • @rideION |
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Stage 2 ION: LRT from Kitchener to Cambridge

Public Consultation Centre No. 2
February 15, 16 and 23, 2017

Public Information Package

1.0 Light Rail Transit in Waterloo Region

In June 2011, Region of Waterloo Council approved a staged approach to implement Light Rail Transit (LRT) from Waterloo to Cambridge. In 2014, Regional Council awarded GrandLinq the contract to design, build, finance, operate and maintain Stage 1 ION LRT. Stage 1 ION (currently under construction) includes LRT from Waterloo to Kitchener and Bus Rapid Transit (BRT) from Kitchener to Cambridge (launched September 2015). Stage 1 LRT service is expected to launch in 2018.

Stage 2 ION will see BRT service replaced by LRT, creating a continuous LRT system across the Region's three urban centres.

For more information on the background and history of rapid transit in the Region please refer to *The ION Story* handout, available at this Public Consultation Centre and online www.regionofwaterloo.ca/rapidtransit.

2.0 Why are we here?

The Region of Waterloo is continuing the detailed planning and consultation process for Stage 2 ION: LRT from Kitchener to Cambridge. Public input is an essential and on-going component of this process.

The purpose of this Public Consultation Centre (PCC) is to:

- Present the short-listed route alternatives
- Explain how the alternative routes were compared
- Present the Preliminary Preferred Route
- Hear your feedback on the Preliminary Preferred Route

3.0 How will my input be used?

Your comments will be used to:

- Verify study area conditions and constraints
- Identify issues that may need further consideration in the preliminary design stage

4.0 Comments from Public Consultation Centre No. 1

The Consultation Report from PCC No. 1 summarizes the comments received during the first round of public consultation in November 2015. The report is available at this Public Consultation and online www.regionofwaterloo.ca/rapidtransit.



5.0 Why re-examine the Council endorsed route?

The Project Team started with the 2011 Council endorsed route. Several challenges were identified with the preferred route after more detailed study. In order to maximize the opportunity for transit-supportive development and create the most cost-effective solution (both in terms of construction and operating costs) a number of alternative routes were added and presented to the public at PCC No. 1 in November 2015.

6.0 How were the route alternatives chosen?

The Project Team (for more information on the Project Team, please see page 6) started with the 2011 Council endorsed route. A number of alternative routes were added and presented to the public at PCC No. 1 in November 2015. The Project Team considered many questions to guide the development of route options, including:

- Do the proposed routes offer the most direct connections to the proposed stops in order to improve travel times?
- Do the potential corridors have a reasonable right-of-way width to fit LRT?
- Is there reurbanization potential around the LRT stop areas?
- Are there constraints such as mature neighbourhoods or environmentally sensitive areas that would restrict opportunities to develop stop areas?

7.0 Route alternatives screening process

Following a review of the comments received from PCC No. 1, a screening process was completed. This resulted in several routes shown at PCC No. 1 being set aside.

Each route was reviewed for engineering considerations and environmental constraints that posed obstacles to construction or implementation of the final system. The main considerations and constraints were:

- Steep hills or sharp curves in the roads and railway lines that could impact LRT operations
- Narrow rail rights-of-way that would need widening to allow freight rail operation to co-exist with LRT
- Narrow road rights-of-way that would need widening or removal of traffic/parking lanes to accommodate LRT
- Availability of and impacts to rights-of-way owned by third parties (railways, utilities, federal or provincial agencies/ministries)
- Existing rail and road bridges with limited width
- Property access for the on-road sections of LRT routes
- Major utilities (e.g. gas, water, hydro) that may need to be relocated
- Environmental features that would prevent the roadway from being widened to fit both travel lanes and the LRT right-of-way
- Local site conditions or other factors that could significantly increase construction costs



The route alternatives that had many challenges or constraints considered too great to overcome, were screened out.

The short-listed routes are shown in the maps in Appendix A.

8.0 Evaluation of short-listed routes

The study area was divided into segments for comparison purposes using common connection points as a dividing line. This is shown on the map on page 8.

8.1 Evaluation Process

The evaluation criteria used are based on the Regional Official Plan community and transportation objectives and fall under four categories:

- Transportation
- Social/Cultural Environment
- Natural Environment
- Economic Environment.

The Project Team, which includes specialized technical and environmental experts from a variety of fields, carried out an analysis of how well each route meets the evaluation criteria objectives. The results of the analysis were used to compare routes within segments, and are represented by circles with different levels of shading (details in Appendix B). It is important to note that the results of this evaluation provide a relative comparison for routes within the same segment. For example, routes in Kitchener were compared to other Kitchener routes, while routes in South Cambridge were compared only to other South Cambridge routes.

The analysis and draft evaluation summary were reviewed by the Technical Advisory Committee consisting of staff and departments from the Region including Grand River Transit, as well as the Cities of Kitchener and Cambridge, Ministry of Transportation and Grand River Conservation Authority. The Project Team also incorporated input from the Region's Senior Management Team and the Rapid Transit Steering Committee, which includes four Regional Councillors and the Regional Chair.

Based on the evaluation results and the input received, the Project Team, in cooperation with the Technical Advisory Committee, identified a route considered to be preferred for each segment. Combining the four preferred route segments, the project team identified a single, continuous route through the study area, referred to as the Preliminary Preferred Route.





8.2 Evaluation criteria

The following table shows the evaluation criteria.

Category	Criteria	Description
Transportation	Ability to Serve Multi-Modal Nodes	Are there good opportunities for connections between LRT, Grand River Transit (GRT), and GO services, as well as Park-and-Ride lots?
	Impact on Traffic Operations	How many new signalized intersections are required? How many existing intersections have capacity issues and would be further impacted by LRT?
	Engineering Challenges	How many freight rail, MTO interchange or highway crossings are there? How compatible or constrained are they?
	Potential Ridership	How many local transit riders use existing bus stops within 800 m of proposed LRT stops? What is the estimated LRT travel time for the segment based on length, geometry, crossings, stops, and traffic signals?
Social/Cultural Environment	Destinations Served	Are there major commercial, industrial, office, or leisure destinations within 800 m of proposed LRT stops? How many hospitals, schools or other institutional uses are there within 800 m of the stops?
	Properties Impacted	How many residential, commercial, industrial or institutional properties are impacted and how many of those could potentially require full buy-out?
	Transit and Pedestrian Supportive Land Use Policy	Does the route fit with existing planning policy, such as the Provincial Growth Plan, Official Plan, Transportation Master Plan or Zoning By-Laws?
	Cultural Heritage Impacts	How many heritage properties and buildings are there along the route?

continued on next page



Evaluation criteria (cont'd)

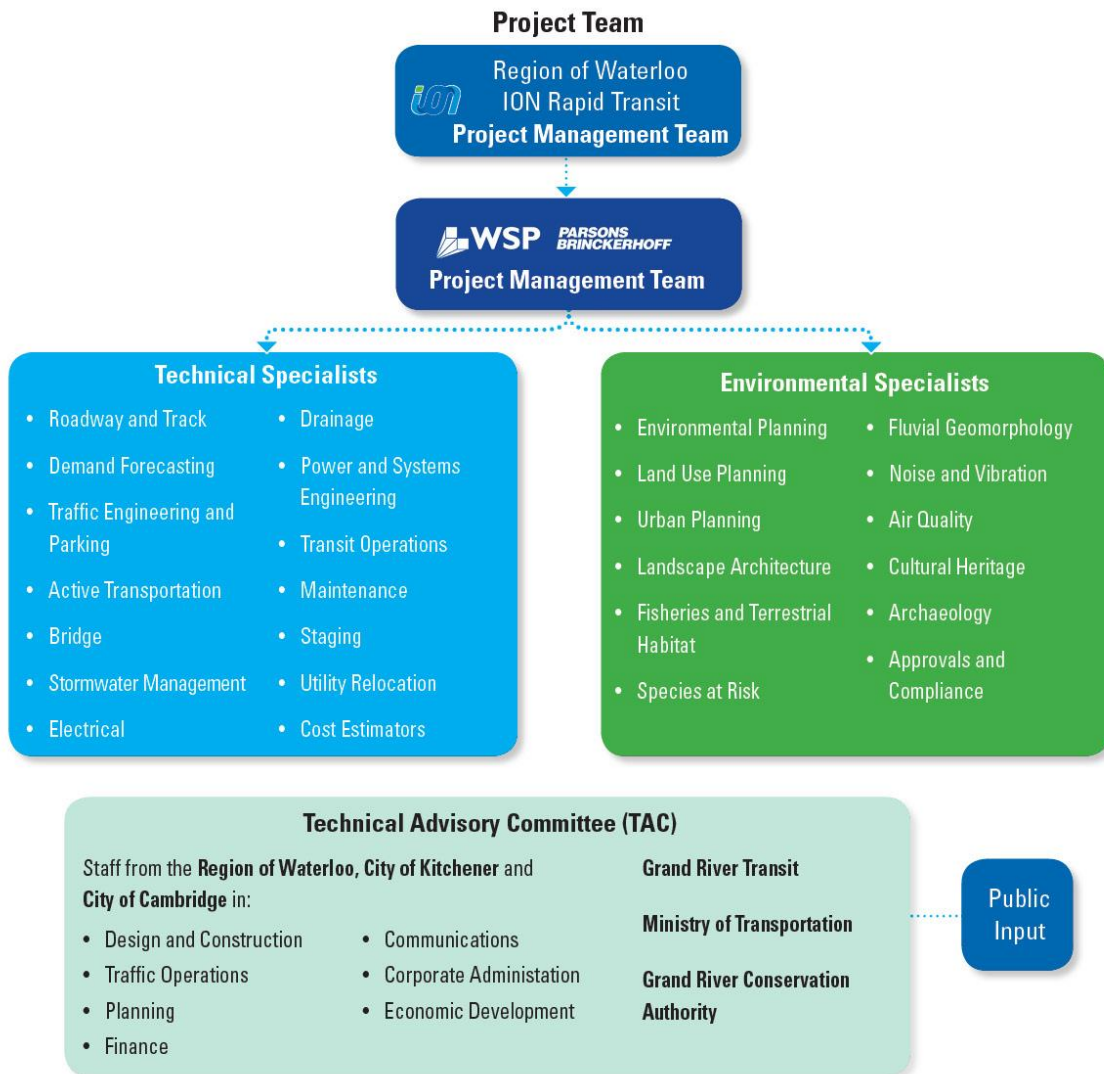
Category	Criteria	Description
Natural Environment	Impact on Floodplains	What area of floodplain does the route cross?
	Impact to Significant Natural Features	Does the route cross or impact any significant natural features such as wetlands, forests, watercourses or habitat for endangered/at risk species?
Economic Environment	Ability to Serve Concentrations of Employment	Will the stops provide access to existing employment areas? Is there potential for new or infill employment development within 800 m of the proposed LRT stop?
	Opportunity for Intensification and Revitalization	Will the stops serve areas that can benefit from revitalization? Is there potential for residential intensification close to the stops?
	Cost (Capital and Operating)	What is the estimated cost (in \$2016) to design and build, then operate and maintain every year?





8.3 Project team

The Project Team is made up of specialists in many areas, supported by a Technical Advisory Committee. The Region has hired a consultant, WSP Parsons Brinckerhoff, to assist with the study, bringing technical expertise from all over North America.





8.4 Evaluation results

The routes were assessed according to how well each route met the objectives of each criterion. Appendix A shows the maps of the route alternatives that are represented with codes (F2A, C1, etc.). Appendix B contains a summary of the evaluation results by segment.

From the detailed route analysis and comparison, the Project Team was able to identify route preferences, and concluded that the following segments were technically preferred: F2a, K2, N3, C1a, C2, S2a and S3. Some of the high level conclusions, which formed a basis for the route preferences, include the following:

- Route F2a had the fewest engineering challenges and was the least expensive route due to its use of the approved River Rd. extension corridor and Highway 8 interchange. F2a also avoids Fairway Rd. and the existing CP Rail crossing on King St., along with the associated traffic impacts and grade separation that would be required at the existing King St. CP Rail crossing.
- Route K2+N3 has some of the largest Social and Cultural impacts (property and cultural heritage impacts), but also some of the largest benefits (destinations served, transit and pedestrian supportive). From a transportation perspective K2+N3 has lower travel time and captures existing riders better than K2+N2. Economically, K2+N3 provides the best opportunities for revitalization and intensification and is less expensive to build and operate than K2+N2.

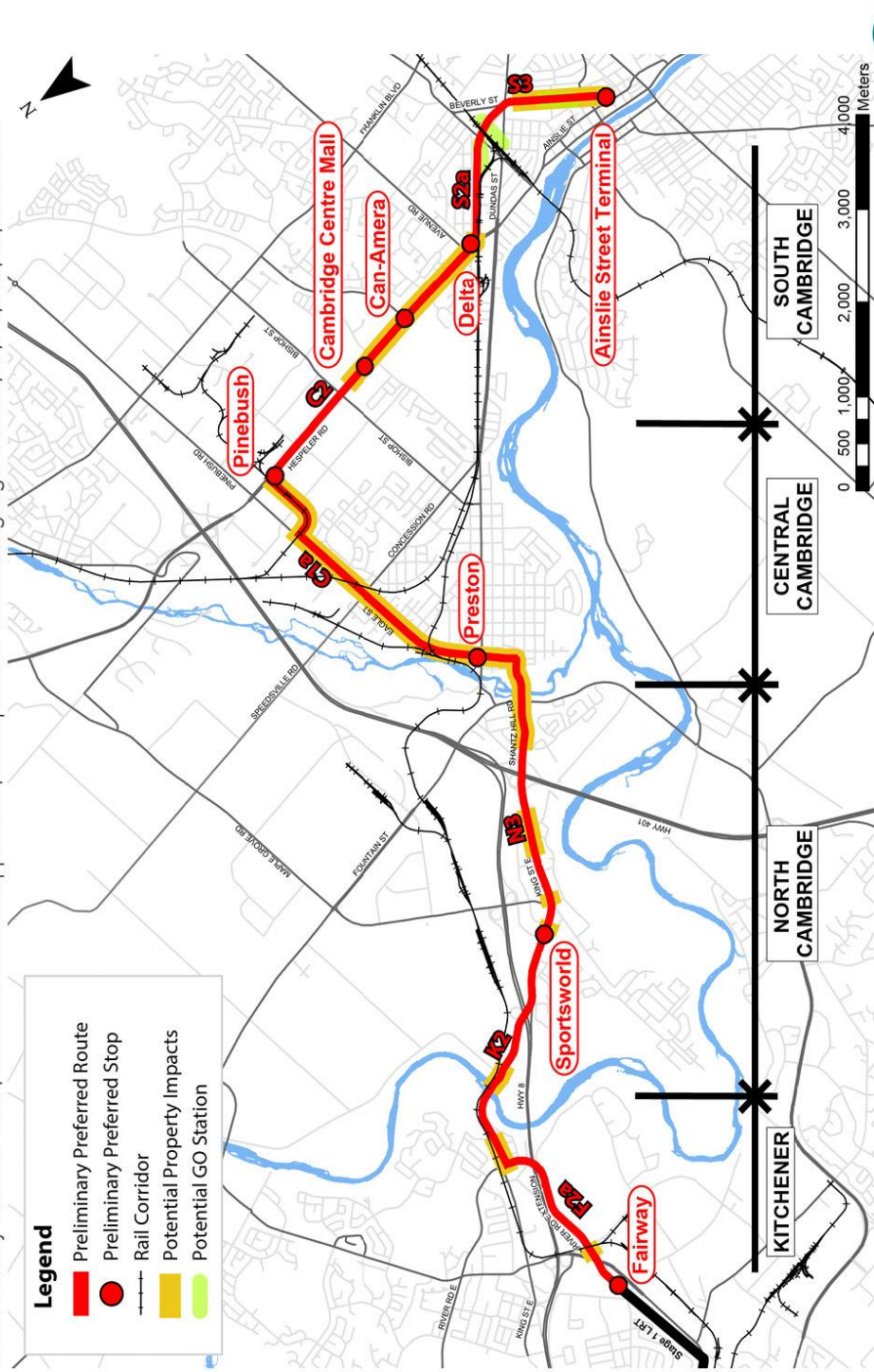
- Routes C1a+C2 and C1+C2 are identical for the majority of the segment, only deviating for a small stretch in the vicinity of Hespeler Rd. and Eagle St. For that short length, route C1a has significant benefits, most notably that it avoids impacts to the Hespeler Rd. and Eagle St. intersection and to the nearby Highway 401 interchange.
- Route S2a+S3 uses an abandoned CN rail corridor parallel to Dundas St. between Hespeler Rd. and Beverley St. This results in the lowest travel time, the least impact to traffic (especially the Delta), and has the fewest design challenges. It also has the best opportunities for ridership and connections to the GO Train in the future.





9.0 Preliminary preferred route

The Preliminary Preferred Route, shown below and in Appendix A, is composed of the following segments: F2a, K2, N3, C1a, C2, S2a and S3.





10.0 Cost estimate of preliminary preferred route

The Preliminary Preferred Route is estimated to cost approximately \$1.25 billion. This estimate is based on the best information we have right now (30 per cent precision, five per cent conceptual design). As we develop the design further we will update the costs accordingly. This includes costs to:

- Design and build the system
- Purchase property
- Relocate utilities
- Build storage and maintenance facility
- Construct park-and-ride lots
- Cover contingency

The cost estimate has been put into future dollars, assuming construction occurs from 2025 to 2028. Construction timing is subject to Provincial and Federal funding.

Key construction items include:

- Road widening and intersection reconstruction to fit LRT
- LRT guide way, signals, power and other related elements
- LRT stops, including passenger information, security and ticketing systems, and interface with local transit services
- Boulevards and streetscape, including cycle lanes, pedestrian sidewalks, multi-use trails
- New bridges over watercourses and roadways

- Modifications to at-grade and grade-separated crossings of rail corridors
- Maintenance and storage facility and power sub-stations
- Modifications to MTO interchanges, where required, to accommodate the LRT corridor

11.0 What are the next steps?

Following this PCC, the Project Team will review all feedback received. Comment sheets may be submitted until March 17, 2017. Any new information will be considered. Using input from the technical team, stakeholders, and the public, the Project Team will finalize the route evaluation and will confirm the Preferred Route.

The next major steps for Stage 2 ION are to:

- Complete the Preliminary Design of the preferred route, including confirmation of anticipated property requirements
- Initiate and complete the formal Transit Project Assessment Process
- Complete the Business Case
- Continue to consult with the public
- Submit Provincial and Federal funding applications

11.1 Preliminary design

Upon confirming the Preferred Route, the Region's consultant and agency partners will undertake the preliminary design.



The preliminary design phase includes various tasks, some of which will be completed by partner agencies:

- Finalize stop locations, including analyzing the need for additional stops
- Preliminary roadway, LRT and stop design, including cycling and pedestrian facilities, bridges, traffic signals, lighting and LRT power and systems
- Plan the re-alignment of GRT bus system to complement LRT stops (by GRT)
- Design and assess options for the southern terminus in the Ainslie Terminal area
- Select a site for the storage and maintenance facility
- Assess design optimizations to minimize property requirements
- Develop drawings showing anticipated property requirements
- Consult agencies on permit/approval requirements and methods to minimize impacts
- Update cost estimates and develop a preliminary implementation schedule

The Preliminary Design of the Preferred Route and the results of the above tasks will be presented at PCC No. 3, planned for later in 2017.

11.2 Transit Project Assessment Process

Following PCC No. 3, the Project Team will present the Preferred Route to Regional Council for final recommendation and authority to initiate the formal Transit Project Assessment (TPA) Process. The TPA will

incorporate all of the planning, engineering and technical studies, and analysis which have already been completed or are currently on-going. The process starts with a selected transit project. The Transit Project Assessment is a streamlined process, approved by the Province under the Environmental Assessment Act, specifically for transit initiatives. The TPA regulation provides a framework for focused consultation and objection processes.

The Minister of Environment and Climate Change may give notice allowing a proponent to proceed with its transit project, but can only take action if there is a potential for a negative impact on a matter of provincial importance that relates to the natural environment or has cultural heritage value of interest, or on a constitutionally protected Aboriginal or treaty right.

Some of the key steps and planned timing for the TPA Process include:

- Formally commence the TPA Process (late 2017) with a "Notice of Commencement"
- Prepare the draft Environmental Project Report (EPR): The EPR is a formal document which compiles all of the planning, engineering, and technical inventories, analyses and studies. It includes sections on existing conditions, description of the Preferred Route, potential impacts of the project on the social, economic, and natural environment, and proposed mitigation measures to reduce impacts. The draft EPR will be circulated to technical and regulatory agencies in addition to Aboriginal communities
- Address any comments submitted during the public or Minister's review periods
- Finalize the EPR, file it for 30-day public



review and publish the “Notice of Completion of the Environmental Project Report” (early 2018)

11.3 Business Case

The Business Case refers to the Project Team’s economic analysis of the project based on the preferred route. It looks at the project through a comparison of the overall costs to build, operate and maintain the system, and the economic benefits to the Region and its residents such as fare revenue, increased land values, travel time savings, new employment and health/environmental benefits.

The Business Case is the primary document which supports an application for funding from the Provincial and/or Federal governments.

The Business Case will be carried out during preliminary design, and will be presented to Regional Council later in 2017. More information about the Business Case will be presented at PCC No. 3.

11.4 Public consultation

Feedback from the public is an important part of this project. The public consultation process will also provide an opportunity for the public to provide input regarding the study, and ask the Project Team questions about Stage 2 ION and about the Environmental Assessment process.

A third PCC is planned for later in 2017. Following completion of PCC No. 3 and receipt of comments, the Project Team will compile and summarize all of the methods of public consultation from the start of the Study. Once complete, the EPR will be filed and made available for public review and comment for a

30-day period, following which any comments received will be addressed.

11.5 Provincial and Federal funding

After completing the necessary studies, the Region will seek Provincial and Federal funding for Stage 2 LRT.

12.0 How do I stay involved?

Sign-in tonight or sign-up at the website www.stage2ION.ca to be notified of future meetings. There will be an additional PCC held during the study. Feedback can also be provided by:

- Speaking with a Project Team member
- Participating in a short structured feedback exercise with the team here or online
- Submitting your thoughts via comment sheet or online

Stage 2 ION documents are available at www.stage2ION.ca. If you would like to have your name added to the project mailing list, please sign-up online at www.stage2ION.ca, or provide your name, postal address, email address and any group affiliation to:

13.0 Contact information

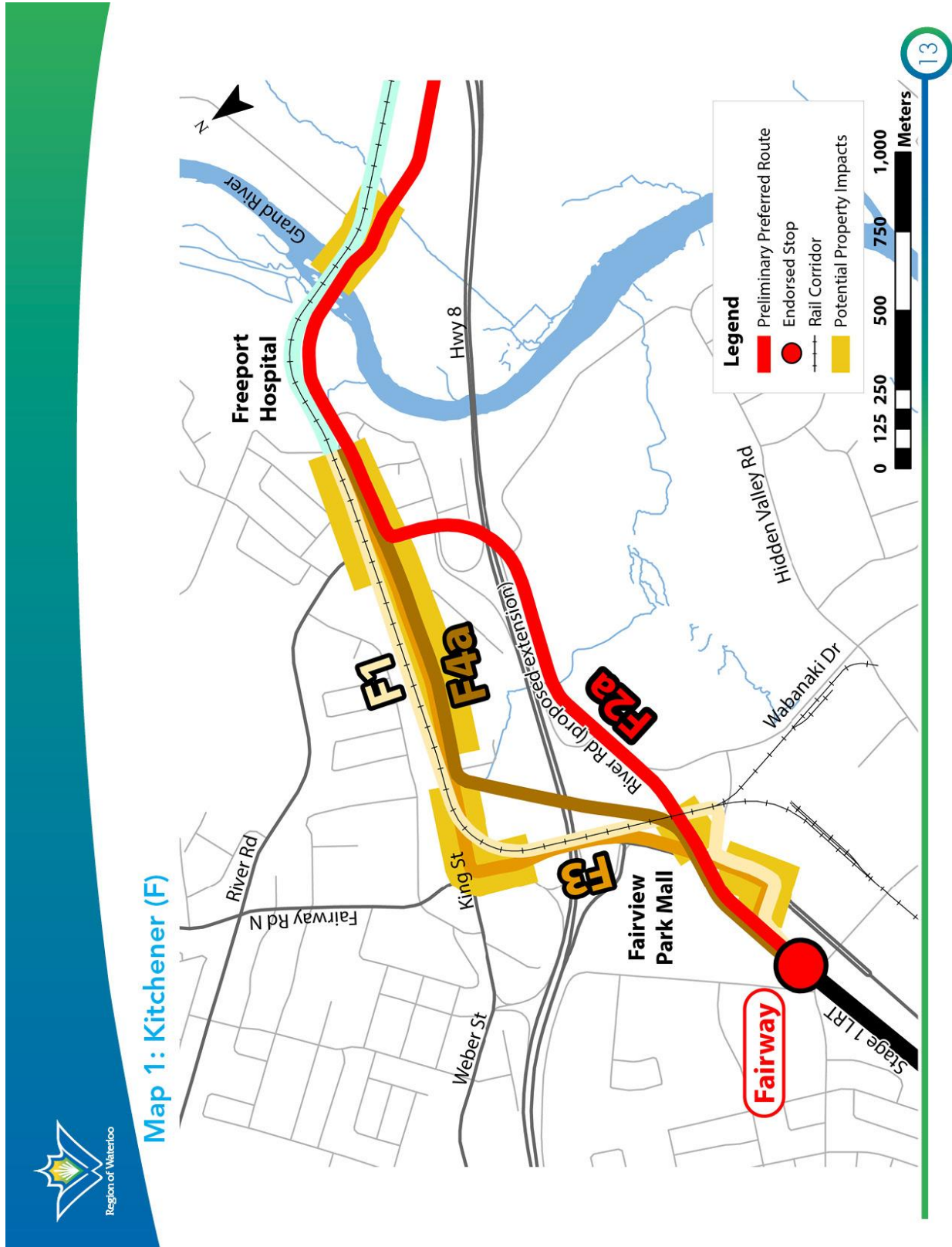
Rapid Transit
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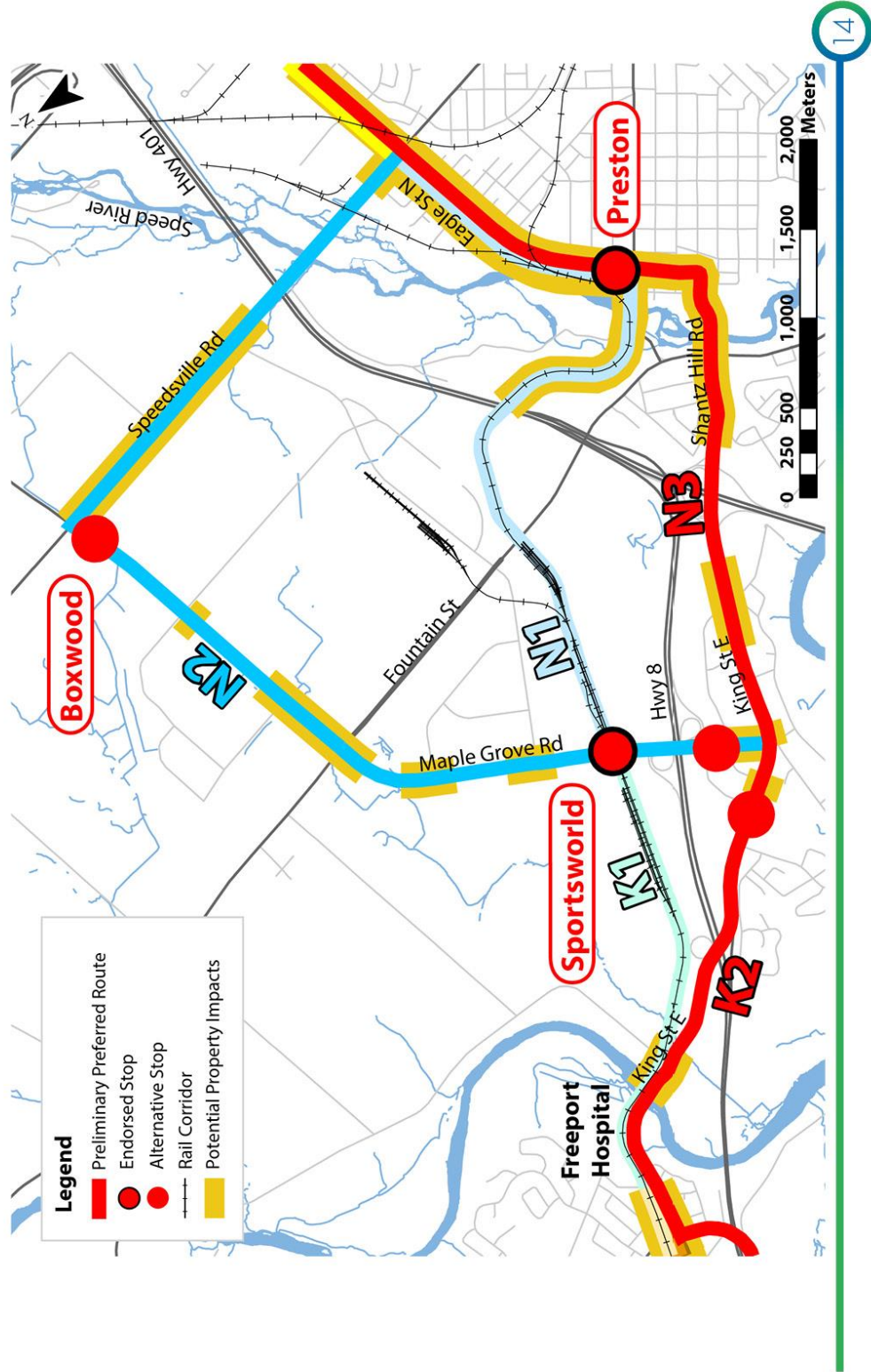


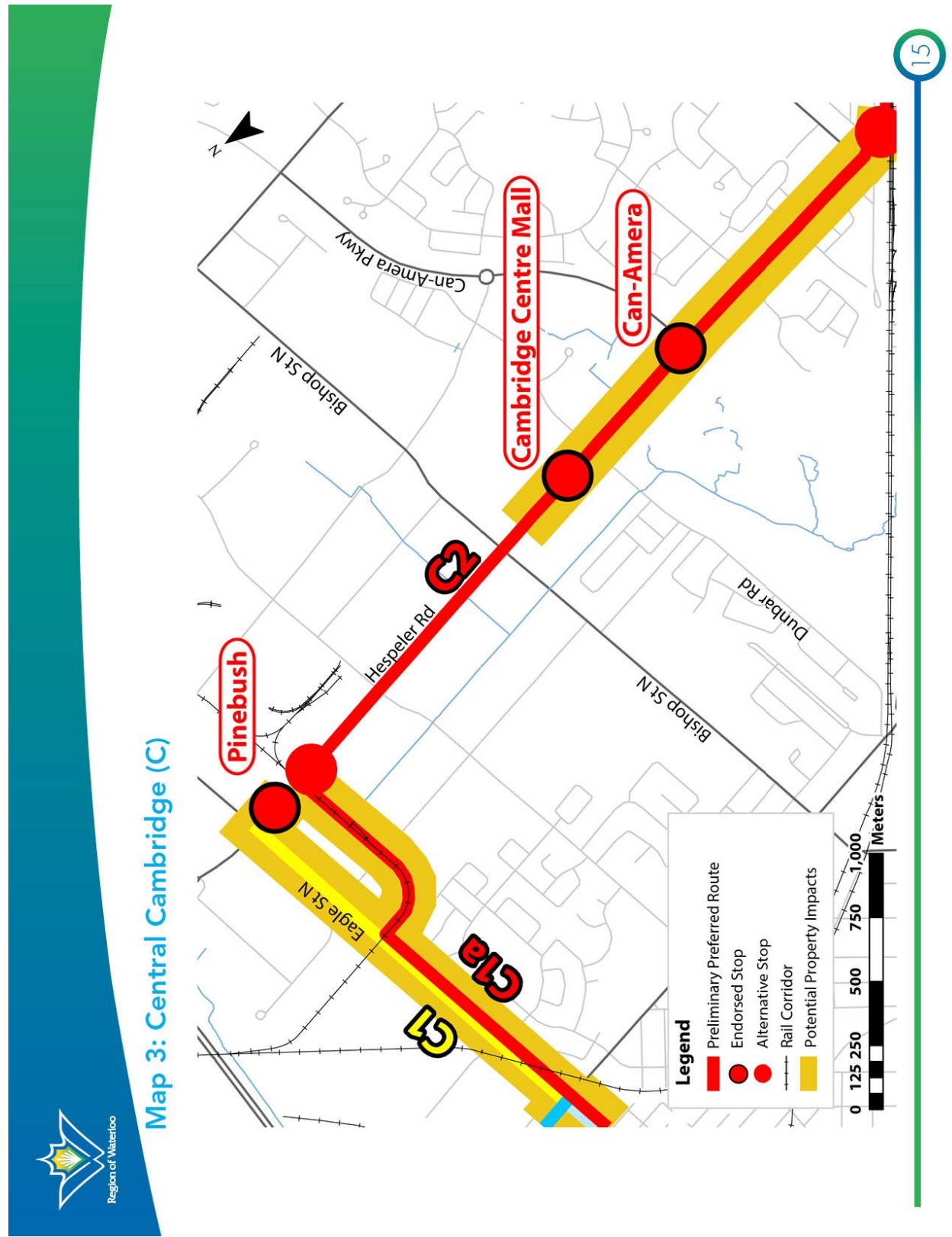
Appendix A ▶ Route maps by segment

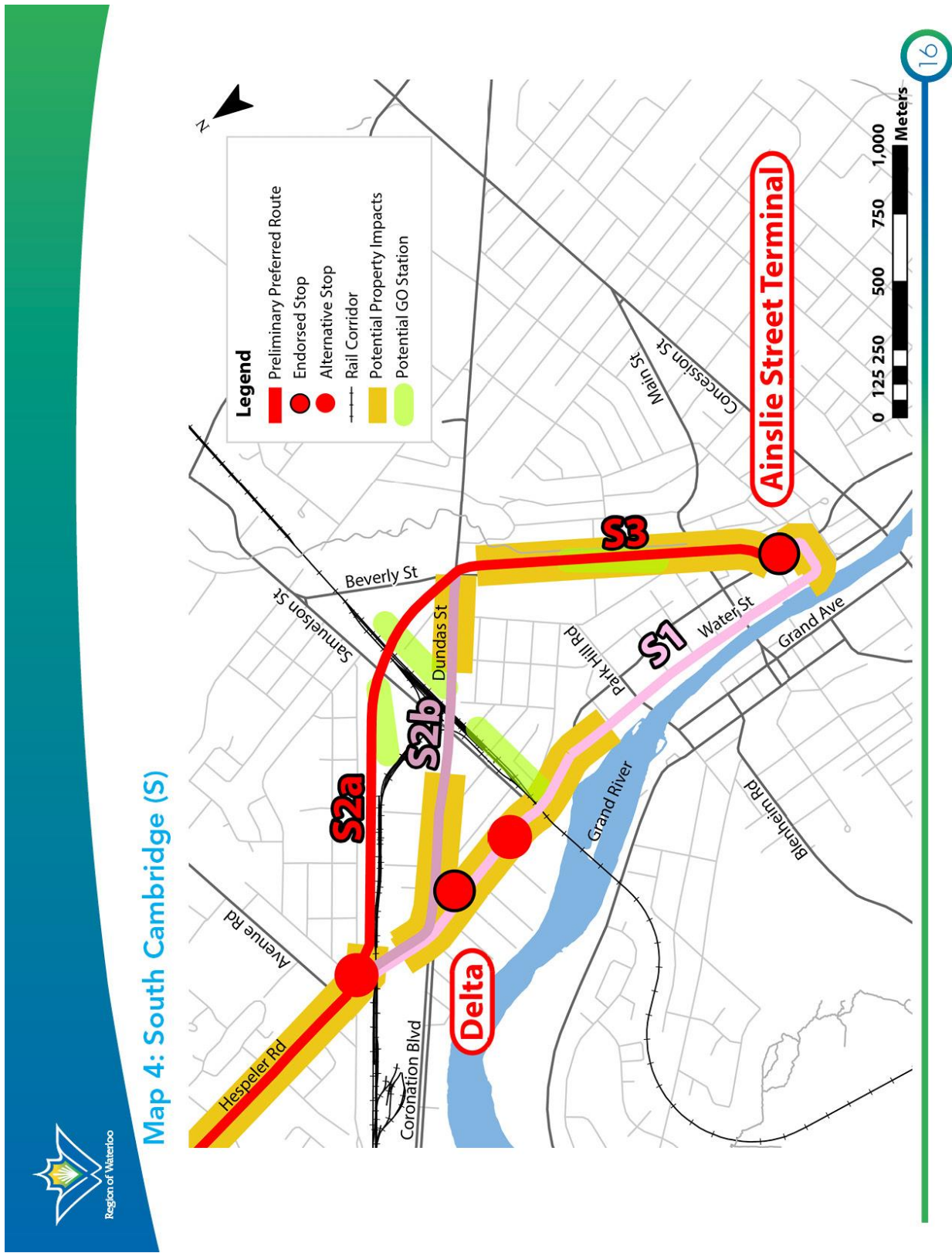
NORTH CAMBRIDGE CENTRAL CAMBRIDGE SOUTH CAMBRIDGE

Pinebush
Cambridge Centre Mall
Gas Armera
Ainslie Street Terminal







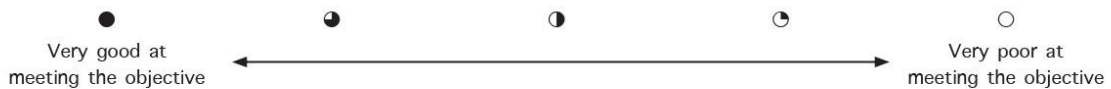




Appendix B  Evaluation results



Kitchener (F) Evaluation Results (*preliminary preferred)		F1	F2a*	F3	F4a
Transportation and Mobility					
1.0	Ability to serve multimodal nodes	N/A	N/A	N/A	N/A
2.0	Impact on traffic operations	●	●	●	●
3.0	Engineering challenges	○	●	●	●
4.0	Ridership	●	○	○	●
Social/Cultural Environment					
5.0	Destinations served	N/A	N/A	N/A	N/A
6.0	Properties impacted	●	●	○	●
7.0	Transit and pedestrian supportive land use planning policy	N/A	N/A	N/A	N/A
8.0	Cultural heritage impacts	●	●	○	○
Natural Environment					
9.0	Impact on floodplains	●	●	●	●
10.0	Impact to significant natural features	●	○	●	●
Economic Impact					
11.0	Ability to serve concentrations of employment	●	●	●	●
12.0	Opportunities for revitalization/intensification	N/A	N/A	N/A	N/A
13.0	Cost	○	●	●	○





Kitchener (F) segment of the study area is between the Fairway stop (Stage 1 LRT) and the intersection of King St. and River Rd.

F2a Over Fairway Rd., along River Rd. to King St. – PREFERRED

- ✓ Less expensive to build than F4a and least expensive to operate due to use of approved River Rd. extension corridor and Highway 8 interchange
- ✓ Avoids property impacts in the vicinity of Fairway Rd. and King St.
- ✓ Least impact on traffic operations
- ✗ Potential impacts to Hidden Valley environmentally sensitive area and potential impacts to River Rd/Hwy 8 traffic operations

F1 Along Fairway Rd. and CP corridor – NOT PREFERRED

- ✓ Lowest travel time and most potential riders
- ✓ Impacts the fewest properties
- ✓ Avoids the Hidden Valley environmentally sensitive area
- ✗ Requires a realignment of a long stretch of CP Rail track to get LRT under Highway 8
- ✗ New bridge required on King St. taking roadway over LRT and CP Rail tracks south of Fairway

F3 Along Fairway Rd. and King St. – NOT PREFERRED

- ✓ Fewest engineering challenges by using existing road corridors
- ✓ Least expensive to build
- ✓ Avoids the Hidden Valley environmentally sensitive area
- ✗ Longest travel time and fewest potential riders due to intersection delays
- ✗ New bridge required on King St. taking roadway and LRT over CP Rail tracks just south of Fairway Rd.
- ✗ Highest number of properties and accesses impacted, especially near Fairway Rd. and King St.
- ✗ Most expensive to operate

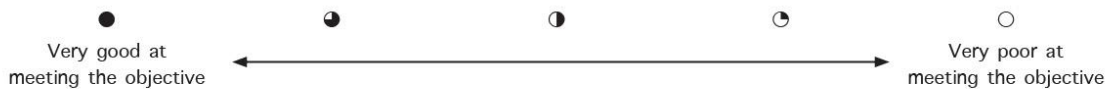
F4a Over Fairway Rd, along Hydro corridor and King St. – NOT PREFERRED

- ✓ Shorter travel time and more potential riders by sharing hydro corridor which reduces intersection delays
- ✓ Does not impact Fairway traffic
- ✓ Avoids property impacts around Fairway and King
- ✓ Avoids the Hidden Valley environmentally sensitive area
- ✗ New bridge required over Highway 8
- ✗ Requires burial of existing high voltage hydro lines
- ✗ Most expensive to build



North Cambridge (K+N)
Evaluation Results (*preliminary preferred)

		K1+N1	K2+N2	K2+N3*
Transportation and Mobility				
1.0	Ability to serve multimodal nodes	○	●	◐
2.0	Impact on traffic operations	●	◐	◐
3.0	Engineering challenges	◐	●	●
4.0	Ridership	●	○	◐
Social/Cultural Environment				
5.0	Destinations served	●	◐	●
6.0	Properties impacted	◐	●	○
7.0	Transit and pedestrian supportive land use planning policy	◐	◐	●
8.0	Cultural heritage impacts	◐	●	○
Natural Environment				
9.0	Impact on floodplains	○	◐	●
10.0	Impact to significant natural features	◐	○	●
Economic Impact				
11.0	Ability to serve concentrations of employment	◐	●	◐
12.0	Opportunities for revitalization/intensification	●	○	●
13.0	Cost	●	◐	◐





North Cambridge (K+N) segment of the study area is between the intersection of King St. and River Rd. and the intersection of Eagle St. and Speedsville Rd./Concession Rd.

K2+N3 King St., Shantz Hill, over Fountain St./ Speed River, along Eagle St. – PREFERRED

- ✓ Less expensive than K1+N1, as it avoids CP corridor
- ✓ Greatest potential for revitalization (e.g. King St. and Eagle St. area) and best serves destinations
- ✓ Best supports transit and pedestrian goals
- ✓ Least impact on floodplains and natural features
- ✓ Cost to build and operate lower than K2+N2
- ✗ Impacts the highest number of properties and the most buildings
- ✗ More traffic impacts than K1+N1 (which uses CP corridor) due to use of roadways
- ✗ Fewer opportunities for connections to on- or off-street local and inter-city bus service
- ✗ Highest number of heritage buildings along route

K1+N1 CP Corridor to Riverside Park, along King St. and Eagle St. – NOT PREFERRED

- ✓ Shortest travel time and most potential riders
- ✓ Lowest impact on traffic by using CP Rail corridor
- ✓ Least expensive to build and operate

- ✗ Availability of right-of-way in the CP corridor is very limited
- ✗ Requires realignment of long stretch of CP Rail track
- ✗ Requirement to reconstruct/relocate yard trackage and spur lines near Toyota
- ✗ Requires a tunnel to be constructed beneath Highway 401
- ✗ LRT stop is further from residential and commercial developments near King and access would be limited due to proximity of Highway 8 interchange
- ✗ Requires a new bridge on Eagle to take LRT and road over CP Rail

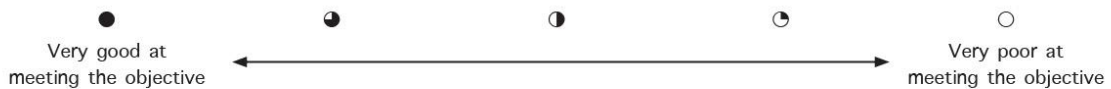
K2+N2 King St., Sportsworld Dr., Maple Grove Rd., Speedsville Rd. – NOT PREFERRED

- ✓ Opportunity for additional stop near Boxwood Business Park and Hunt Club developments
- ✓ Adequate right-of-way width along Maple Grove
- ✓ Avoids property impacts along Eagle west of Speedsville
- ✓ Fewest heritage buildings along route
- ✓ Fewest properties impacted
- ✗ Misses opportunity for intensification and revitalization in the King and Eagle areas
- ✗ Longest travel time due to extra length of route
- ✗ Fewest potential riders
- ✗ Most expensive to build and operate
- ✗ Least compatible with Region and City transit and pedestrian goals and policies
- ✗ Highest impact to natural features with two bridges crossing Speed River and floodplain



Central Cambridge (C)
Evaluation Results (*preliminary preferred)

		C1a+C2*	C1+C2
Transportation and Mobility			
1.0	Ability to serve multimodal nodes	●	◐
2.0	Impact on traffic operations	◐	●
3.0	Engineering challenges	●	○
4.0	Ridership	●	◐
Social/Cultural Environment			
5.0	Destinations served	●	●
6.0	Properties impacted	◐	◐
7.0	Transit and pedestrian supportive land use planning policy	●	●
8.0	Cultural heritage impacts	●	●
Natural Environment			
9.0	Impact on floodplains	◐	●
10.0	Impact to significant natural features	●	●
Economic Impact			
11.0	Ability to serve concentrations of employment	●	◐
12.0	Opportunities for revitalization/intensification	●	●
13.0	Cost	●	◐





Central Cambridge (C) segment of the study area is between the intersection of Eagle St. and Speedsville Rd./Concession Rd. to the intersection of Hespeler Rd. and Avenue Rd.

C1a+C2 Eagle St., rail spur and Hespeler Rd. – PREFERRED

- ✓ Avoids Hespeler/Eagle/Pinebush intersection along with the associated traffic impacts, property impacts, and design challenges
- ✓ Off-street LRT stop on west side of Hespeler Rd. is an opportunity for efficient transfers between LRT and local bus service
- ✓ Less expensive due to use of spur line
- ✓ Significantly lower travel time

C1+C2 Eagle St. and Hespeler Rd. – NOT PREFERRED

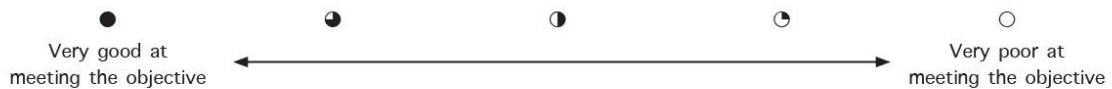
- ✗ More expensive due to use of existing road corridors
- ✗ Significant impacts to the Hespeler/Eagle/Pinebush intersection, including additional capacity issues and potential for queuing onto Highway 401 ramps
- ✗ Design challenges at Hespeler/Eagle/Pinebush intersection; difficult to fit in an LRT stop, achieve an acceptable level of service, and create a friendly pedestrian and cyclist environment
- ✗ Hespeler/Eagle/Pinebush LRT stop location not ideal for transfers to/from GRT





South Cambridge (S)
Evaluation Results (*preliminary preferred)

		S1	S2a+S3*	S2b+S3
Transportation and Mobility				
1.0	Ability to serve multimodal nodes	○	●	◐
2.0	Impact on traffic operations	◐	●	◐
3.0	Engineering challenges	○	●	●
4.0	Ridership	○	●	○
Social/Cultural Environment				
5.0	Destinations served	○	●	◐
6.0	Properties impacted	●	◐	○
7.0	Transit and pedestrian supportive land use planning policy	○	○	●
8.0	Cultural heritage impacts	○	●	◐
Natural Environment				
9.0	Impact on floodplains	○	●	●
10.0	Impact to significant natural features	●	○	○
Economic Impact				
11.0	Ability to serve concentrations of employment	●	◐	◐
12.0	Opportunities for revitalization/intensification	◐	●	◐
13.0	Cost	●	◐	○





South Cambridge (S) segment of the study area is between the intersection of Hespeler Rd. and Avenue Rd. to the Ainslie St. Transit Terminal.

S2a+S3 Old CP Rail corridor to Dundas St. and Beverly St., along Beverly St. – PREFERRED

- ✓ Use of abandoned rail corridor results in shorter travel time, least impact to traffic, and fewest design challenges
- ✓ Greater ridership potential
- ✓ Fewest heritage buildings along route by avoiding Water St.
- ✓ Better opportunities to connect with potential GO Train station
- ✗ High number of properties impacted, including many full buy-outs
- ✗ Most expensive to build (tied with S2b+S3)
- ✗ Not as good at serving existing and potential employment areas

S1 Hespeler Rd., along Water St. to Bruce St. and Ainslie St. – NOT PREFERRED

- ✓ Fewest properties impacted overall, and fewest potential full buy-outs
- ✓ Least expensive to build and operate
- ✗ Highest traffic impacts – impacts the Delta, using vehicle lanes on Water St.
- ✗ Longer travel time due to roadways and intersection delays
- ✗ Greatest design challenges - Water St. corridor is narrow, CP bridge replacement required
- ✗ Highest number of heritage buildings along route

S2b+S3 Hespeler Rd. to the Delta, along Dundas St. and Beverly St. – NOT PREFERRED

- ✓ Few impacts to heritage properties and buildings by avoiding Water St., which is a narrow, built-up corridor
- ✗ Significant impacts to traffic at the Delta and on Dundas St.
- ✗ Most expensive to build (tied with S2a+S3) and operate
- ✗ Longer travel time due to roadways and intersection delays
- ✗ Significant number of properties impacted, including many potential full buy-outs
- ✗ Unlikely to provide a convenient connection to potential GO Train station

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- Stage 2 website: www.stage2ION.ca
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