

Welcome

Stage 2 ION: Light Rail Transit (LRT) from Kitchener to Cambridge Public Consultation Centre (PCC) No. 2

Please Sign-in

Kitchener Lions Arena
Kin Club of Cambridge
Newfoundland Club

Feb. 23, 2017 - 4 - 8 p.m.
Feb. 28, 2017 - 4 - 8 p.m.
Mar. 1, 2017 - 2 - 8 p.m.



ION To Date

- Stage 1 LRT construction is underway from Waterloo to Kitchener and service will begin in 2018
- Bus Rapid Transit (BRT) from Kitchener to Cambridge was completed under Stage 1 and began operating in 2015
- Stage 2 ION will replace BRT with LRT, creating a continuous LRT system connecting Cambridge, Kitchener and Waterloo
- ION is the foundation for the Regional Official Plan objectives:



What is the Purpose of Today?

- Present the updated LRT routes for Stage 2
- Explain how the alternative routes were compared
- Present the Preliminary Preferred LRT Route for Stage 2
- Hear your feedback on the Preliminary Preferred Route

How Will My Input Be Used?

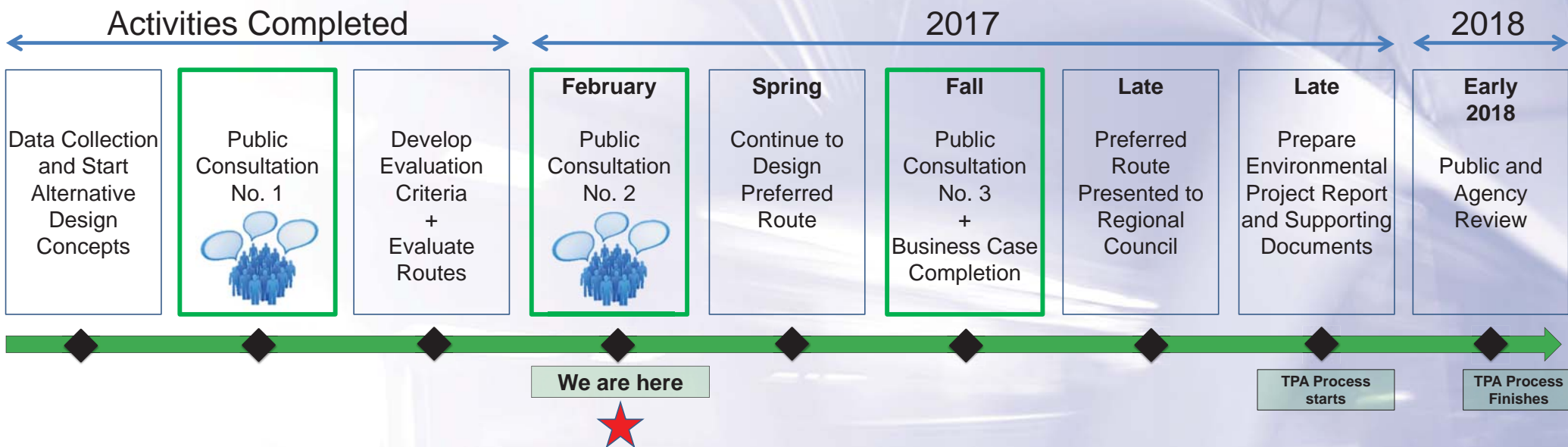
Your comments are important and will be used to:

- verify study area conditions and constraints
- identify issues that need further consideration or adjustment in the preliminary design stage

Please provide feedback by:

- speaking with a project team member
- participating in a structured feedback exercise with the team, in-person today or online
- submitting your comments at this PCC, via email or online by March 17, 2017

Study Timeline

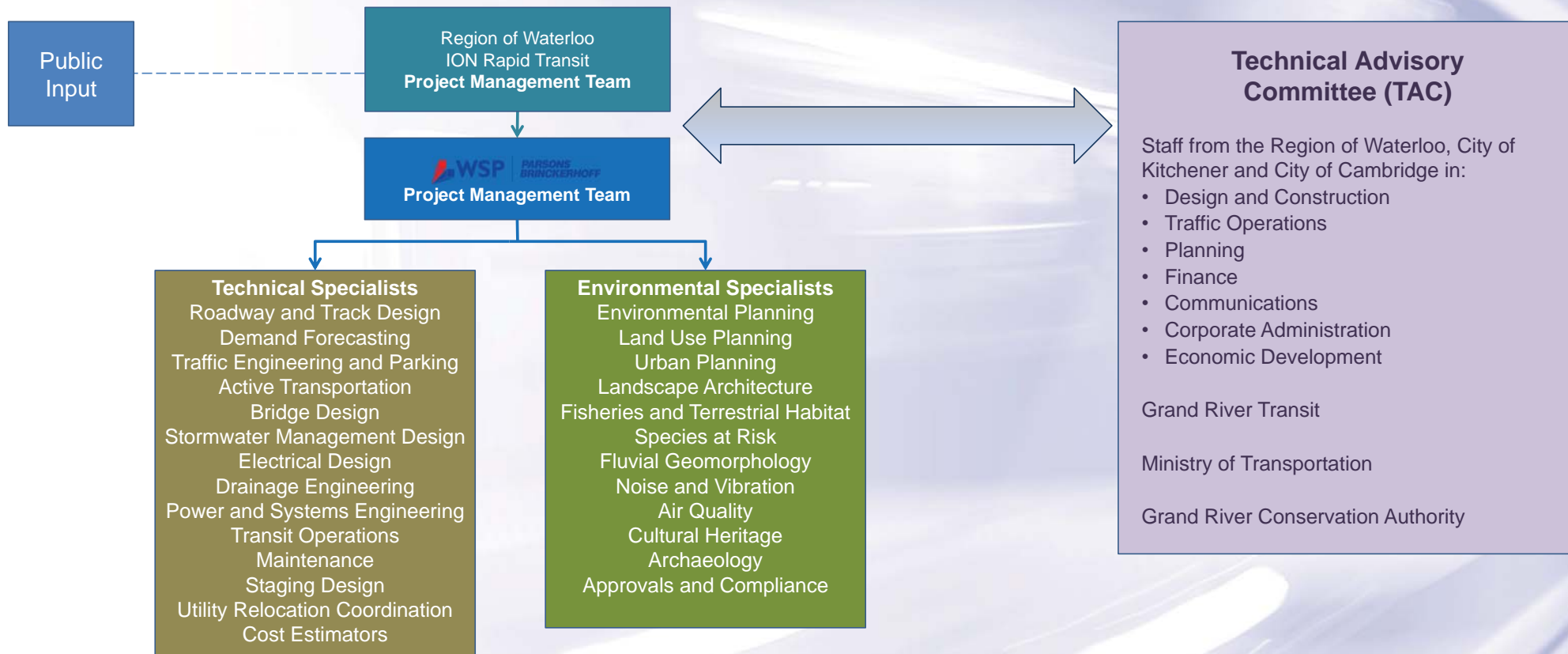


We are following the Transit Project Assessment Process that includes many steps and requirements. It is a detailed process that includes engaging with the public, looking at potential opportunities and challenges, and considering measures to minimize environmental and cultural heritage impacts. An Environmental Project Report (EPR) will be produced for public and agency review.



Project Team

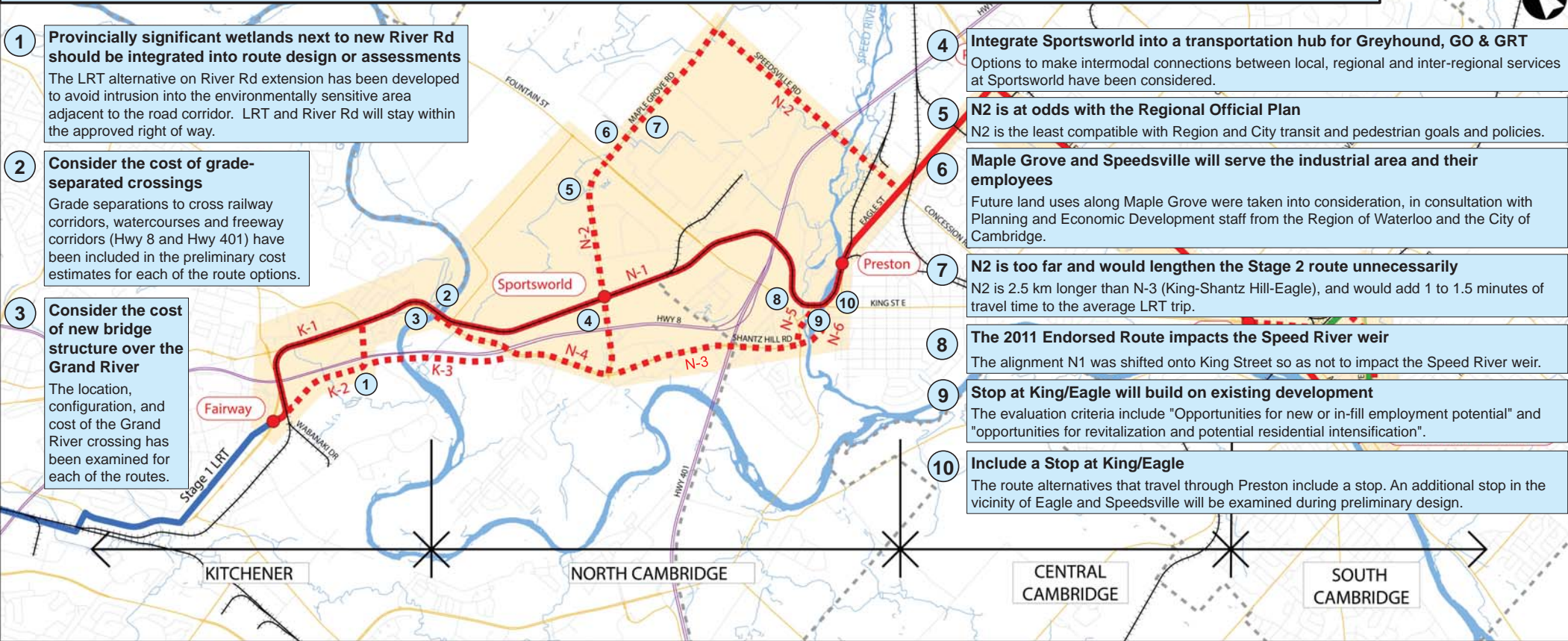
The Project Team comprises specialists in many disciplines, supported by a Technical Advisory Committee (TAC) with representatives from municipal and government authorities



PCC No. 1 Route Alternatives & Feedback

(1 of 2)

Below are selected comments received at PCC No. 1. A full list of comments, and how they were considered, is available for review today or online.



1 Provincially significant wetlands next to new River Rd should be integrated into route design or assessments
 The LRT alternative on River Rd extension has been developed to avoid intrusion into the environmentally sensitive area adjacent to the road corridor. LRT and River Rd will stay within the approved right of way.

2 Consider the cost of grade-separated crossings
 Grade separations to cross railway corridors, watercourses and freeway corridors (Hwy 8 and Hwy 401) have been included in the preliminary cost estimates for each of the route options.

3 Consider the cost of new bridge structure over the Grand River
 The location, configuration, and cost of the Grand River crossing has been examined for each of the routes.

4 Integrate Sportsworld into a transportation hub for Greyhound, GO & GRT
 Options to make intermodal connections between local, regional and inter-regional services at Sportsworld have been considered.

5 N2 is at odds with the Regional Official Plan
 N2 is the least compatible with Region and City transit and pedestrian goals and policies.

6 Maple Grove and Speedsville will serve the industrial area and their employees
 Future land uses along Maple Grove were taken into consideration, in consultation with Planning and Economic Development staff from the Region of Waterloo and the City of Cambridge.

7 N2 is too far and would lengthen the Stage 2 route unnecessarily
 N2 is 2.5 km longer than N-3 (King-Shantz Hill-Eagle), and would add 1 to 1.5 minutes of travel time to the average LRT trip.

8 The 2011 Endorsed Route impacts the Speed River weir
 The alignment N1 was shifted onto King Street so as not to impact the Speed River weir.

9 Stop at King/Eagle will build on existing development
 The evaluation criteria include "Opportunities for new or in-fill employment potential" and "opportunities for revitalization and potential residential intensification".

10 Include a Stop at King/Eagle
 The route alternatives that travel through Preston include a stop. An additional stop in the vicinity of Eagle and Speedsville will be examined during preliminary design.

Legend

- Endorsed* LRT Stop
- Endorsed* Stage 2 Route
- Study Area Boundary
- - - Alternative Route
- Rail Corridor
- - - Municipal Border
- Potential GO Station
- Potential GO Rail Line

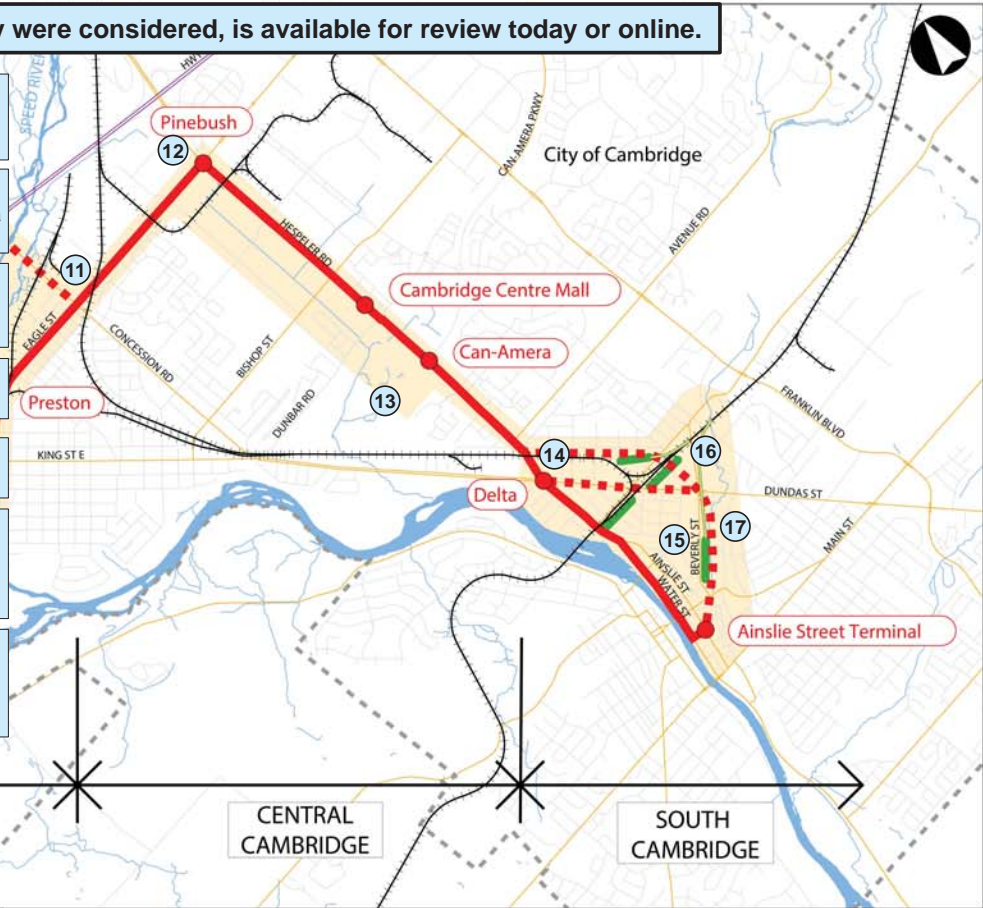
**Stage 2 ION:
 LRT from Kitchener to Cambridge
 Alternative Routes**

*Endorsed by Regional Council in June 2011

PCC No. 1 Route Alternatives & Feedback (2 of 2)

Below are selected comments received at PCC No. 1. A full list of comments, and how they were considered, is available for review today or online.

- 11 Eagle and Speedsville would make a good station location and should be present regardless of whether the route follows the 2011 Council Endorsed Route**
 An additional stop in the vicinity of Eagle and Speedsville will be examined during preliminary design.
- 12 Avoid the Eagle/Pinebush/Hespeler Rd and Hwy 401 area**
 There are significant traffic operation challenges in this area. An additional alternative has been developed which follows a railway spur line that avoids the intersection.
- 13 Consider impacts to the Dumfries Conservation Area**
 Based on current information the roadway widening along Hespeler Rd to accommodate LRT does not encroach on the Dumfries Conservation Area.
- 14 Avoid the Delta, Water and Ainslie**
 In recognition of the constraints associated with the Delta, Water and Ainslie, different route options were investigated.
- 15 Respect the heritage of downtown Cambridge area**
 In recognition of the cultural heritage features in South Cambridge, different route options were investigated.
- 16 GO Train in the vicinity of Samuelson is a good location as there is more non-residential space surrounding this area**
 The location of a potential future GO Station is not known at this time. The project team examined several possible sites, and included the opportunity to provide an inter-modal connection as a factor in the evaluation.
- 17 Alternative route using Beverly and Samuelson is preferable to Water and Ainslie**
 There are many intersecting and parallel railway lines next to Samuelson which presented many technical challenges to introducing LRT along this road, as it would require either new grade separations or significant relocation of railway lines. As an alternative to the routes on Water and Ainslie, two other routes were developed and assessed.



Legend

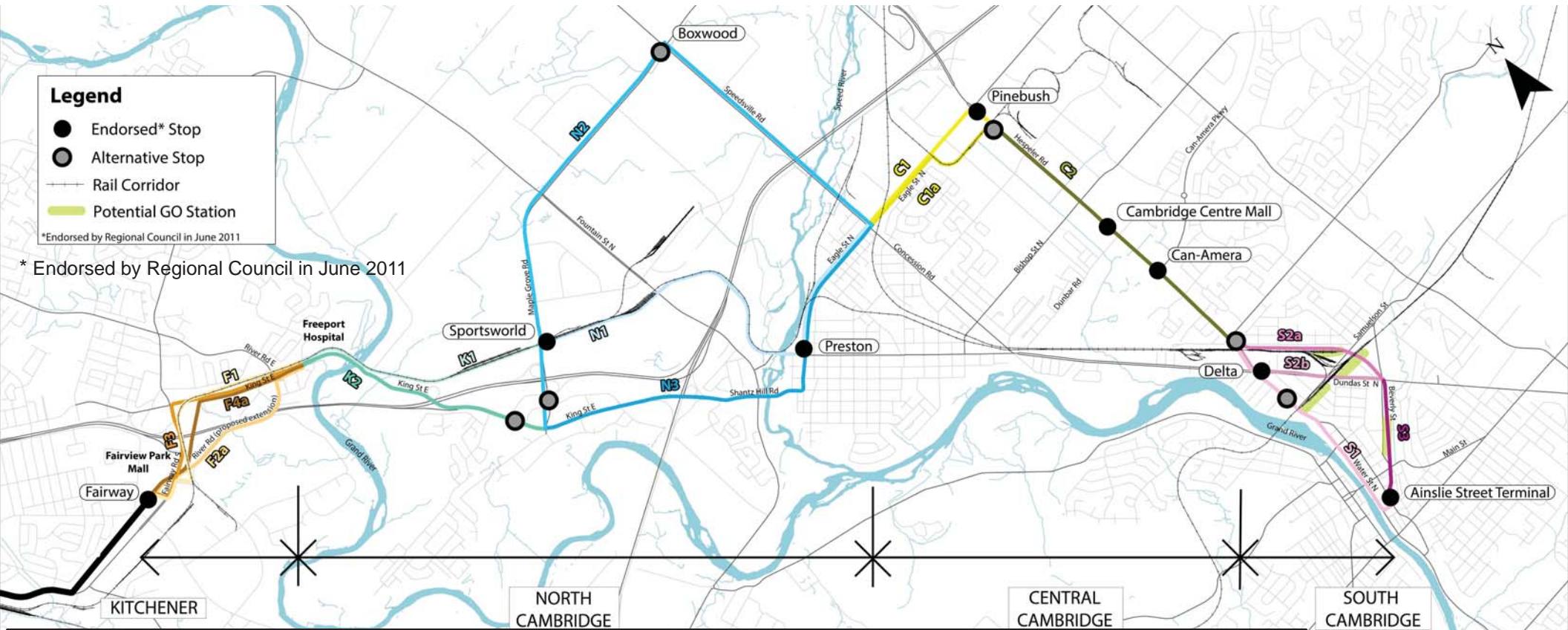
● Endorsed* LRT Stop	- - - Alternative Route	 Potential GO Station
 Endorsed* Stage 2 Route	 Rail Corridor	 Potential GO Rail Line
 Study Area Boundary	 Municipal Border	

Stage 2 ION:
LRT from Kitchener to Cambridge
Alternative Routes

8

*Endorsed by Regional Council in June 2011

Updated Route Alternatives

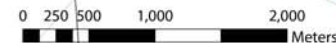


The routes presented at the first public consultation centre were updated based on more detailed mapping of constraints; consultation with municipalities, agencies and stakeholders; design feasibility and costs; and input from Public Consultation Centre (PCC) No. 1.

The following are examples of changes to the routes (refer to the Information Package for a description of the process to finalize the alternatives):

- K3 and N5 have been removed. K3 required a new right-of-way parallel to Highway 8 through sensitive natural habitat, and a long and expensive elevated structure through the Grand River Valley
- "K" routes were further divided into 2 sections: "F" and "K" routes
- N4 was renamed "K2"
- N6+N3 were combined, now "N3"
- N1 was refined at Preston to avoid the Speed River Weir.

The routes above were carried forward for detailed evaluation to determine the Preliminary Preferred Route.



Cultural Heritage Resources

A thorough cultural heritage inventory report has been completed for the entire study area that identifies all cultural heritage resources located in proximity to the route alternatives.

Cultural heritage resources inventoried and identified include:

- Nationally significant properties
- Properties designated under Part IV or Part V of the Ontario Heritage Act
- Properties listed on a Municipal Heritage Register (City of Cambridge and City of Kitchener)
- Candidate properties (identified during field survey as having potential cultural heritage value or interest)

Potential impacts to cultural heritage resources could include removal, alteration, isolation, shadows, or temporary impacts due to construction. Design refinements will be explored to mitigate and reduce these impacts throughout the study area during the preliminary design phase.

Examples of cultural heritage resources along the alternative routes:



Freepoint Bridge (ARA Architects, Sep. 2015)

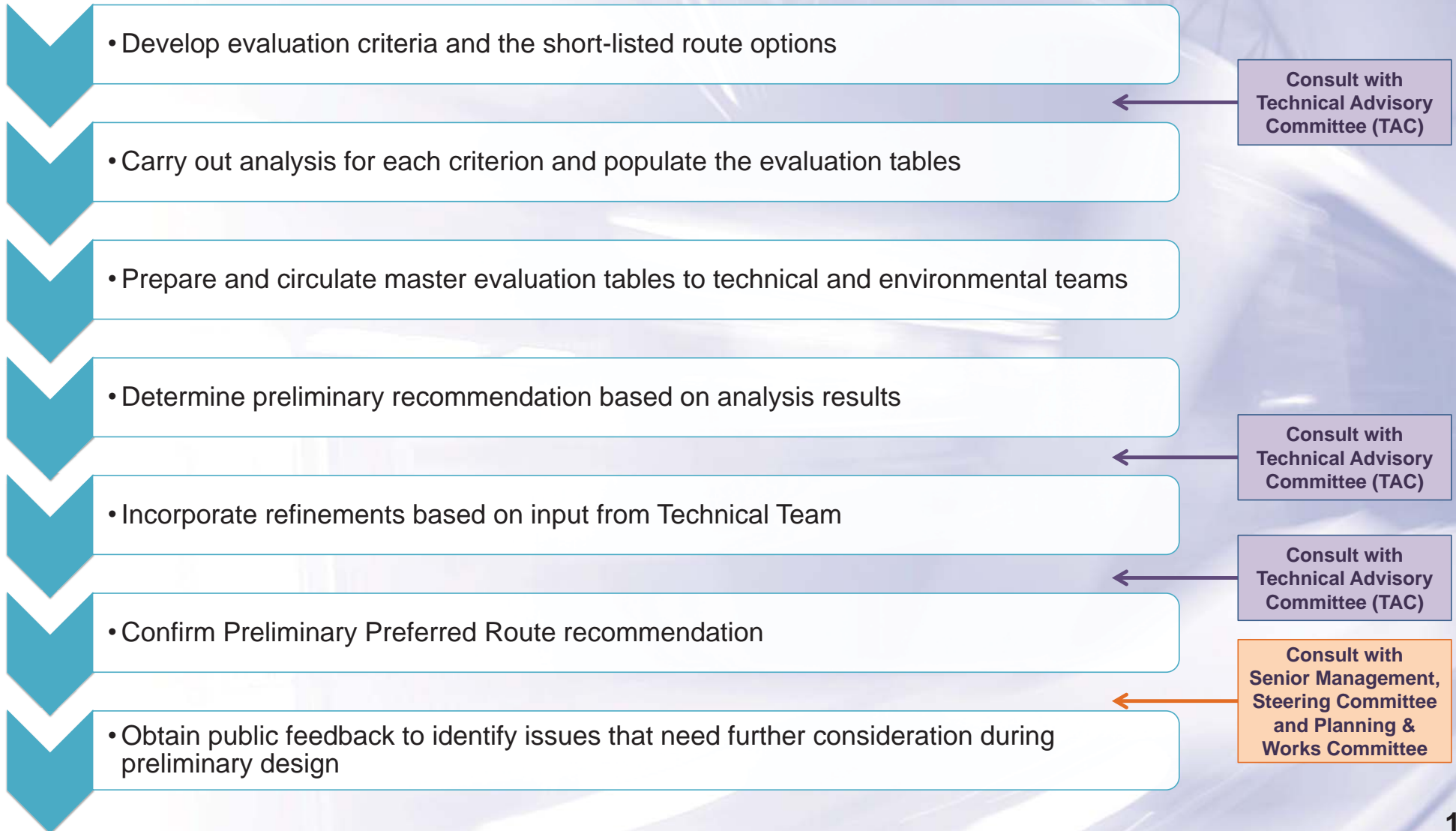


285 Fountain St S (ARA Architects, Mar. 2016)



Eagle St Streetscape (RoW Staff, Aug. 2016)

Evaluation Process



What Was Used To Compare Routes?

The evaluation criteria are based on the Regional Official Plan Objectives and input received from the first public consultation

CATEGORY	CRITERIA
Transportation	<ul style="list-style-type: none"> • Ability to Serve Multi-Modal Nodes • Impact on Traffic Operations • Engineering Challenges • Potential Ridership
Social/Cultural Environment	<ul style="list-style-type: none"> • Destinations Served • Properties Impacted* • Cultural Heritage Impacts • Transit and Pedestrian Supportive Land Use Policy
Natural Environment	<ul style="list-style-type: none"> • Impact on Floodplains • Impact to Significant Natural Features
Economic Environment	<ul style="list-style-type: none"> • Ability to Serve Concentrations of Employment (existing and future) • Opportunity for Intensification and Revitalization • Cost (Capital and Operating) – Class D ($\pm 30\%$) in \$2016

The alternatives were compared and results are based on how well they performed against the criteria.

*Property impacts can include partial or full acquisition or access impacts.

Evaluation Results – Kitchener (F)

Legend

- Preliminary Preferred Route
- Endorsed* Stop
- Rail Corridor
- Significant Environmental Features
- Regulatory Floodplain
- Potential Property Impacts
- Preliminary River Rd Design

*Endorsed by Regional Council in June 2011

Potential Property Impacts (partial and full takings)

F1	6-9
F2a	10-15
F3	30-40
F4a	20-25

F4a uses the Hydro corridor and requires a new crossing of Highway 8 and burial of the existing overhead high voltage hydro lines

F1 and F3 cross under Highway 8 at the existing structure

F1 is located in the CP Rail corridor which has many technical challenges

Approved River Road Extension and Highway 8 interchange shown here

F2a is contained within the proposed River Rd corridor to avoid environmentally sensitive areas

Method of crossing Fairway to be determined

Fairway

Alternatives connect to Stage 1 LRT at Fairway Stop

Stage 1 LRT

Preliminary Preferred Segment: F2a

F2a Over Fairway, along River Rd to King

PREFERRED

- ✓ Less expensive to build than F4a and least expensive to operate due to use of River Rd Extension corridor and Highway 8 interchange
- ✓ Avoids property impacts in the vicinity of Fairway and King
- ✓ 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 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 long stretch of CP Rail track to get LRT under Highway 8
- ✗ New bridge required on King taking roadway over LRT and CP Rail tracks south of Fairway

F3 Along Fairway and King

NOT PREFERRED

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

F4a Over Fairway, along Hydro corridor and King

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 overhead high voltage hydro lines
- ✗ Most expensive to build

Evaluation Results – North Cambridge (K+N)

Legend

- Preliminary Preferred Route
- Endorsed* Stop
- Alternative Stop
- Rail Corridor
- Significant Environmental Features
- Regulatory Floodplain
- Potential Property Impacts

*Endorsed by Regional Council in June 2011

Potential Property Impacts (partial and full takings)

K1+N1	60-75
K2+N2	40-50
K2+N3	85-110

LRT and traffic lanes will be on a new bridge over the Grand River. The existing concrete arch bridge will be retained for cycling and pedestrians

K1+N1 are located in the CP Rail corridor, which is not supported by CP

N1 requires relocation of a section of freight rail mainline and yard

N1 requires a new structure required under Highway 401

Two bridges are required to cross the Speed River and large floodplain

The Eagle Street corridor is narrow, and property impacts are not avoidable

N1 and N3 require new LRT/road bridge over CP Rail

A stop is provided in Preston for the N1 and N3 alternatives in similar locations

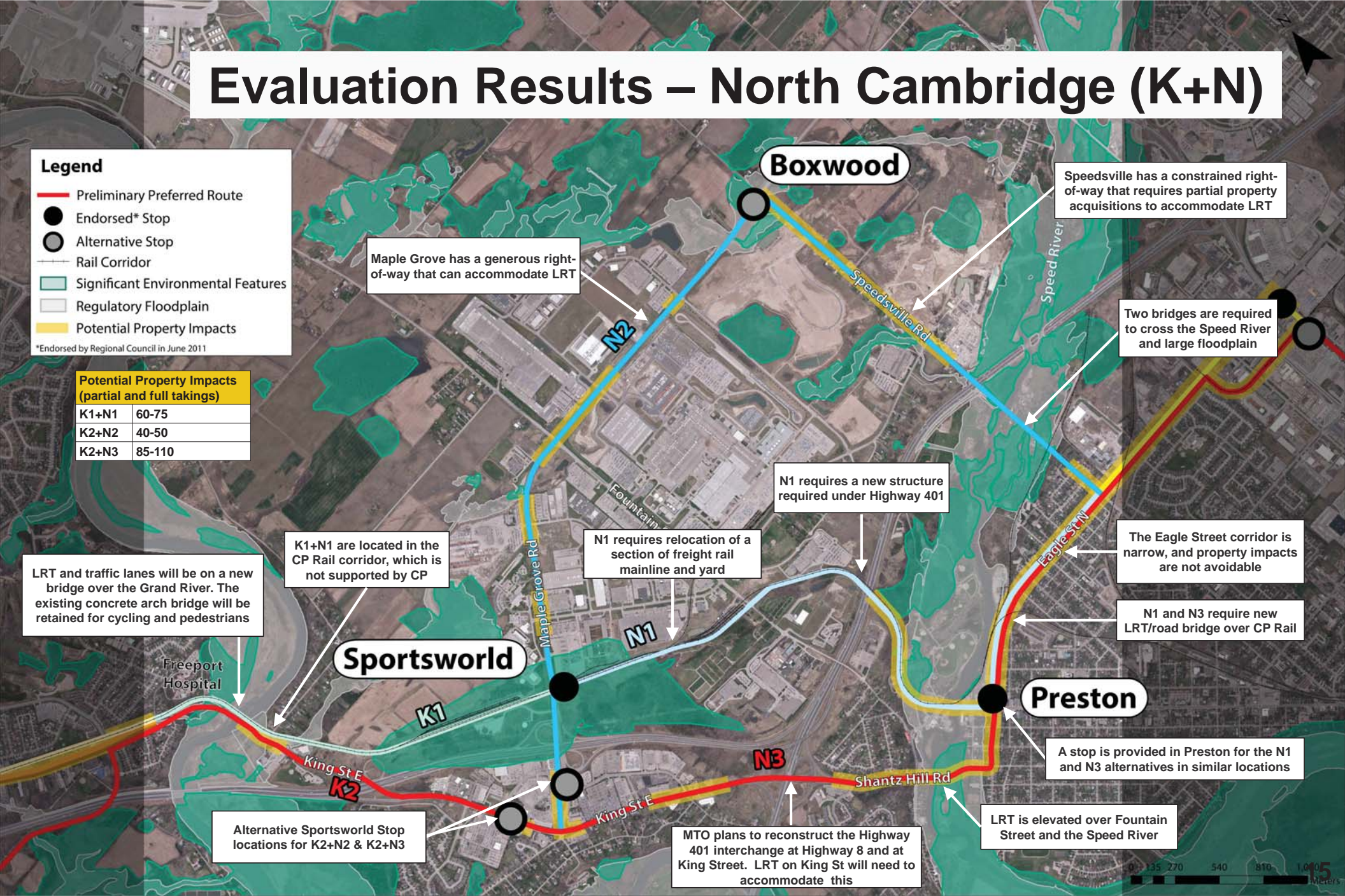
LRT is elevated over Fountain Street and the Speed River

MTO plans to reconstruct the Highway 401 interchange at Highway 8 and at King Street. LRT on King St will need to accommodate this

Alternative Sportsworld Stop locations for K2+N2 & K2+N3

Maple Grove has a generous right-of-way that can accommodate LRT

Speedsville has a constrained right-of-way that requires partial property acquisitions to accommodate LRT



Preliminary Preferred Segment: K2+N3

K2+N3 King, Shantz Hill, over Fountain and Speed River, along Eagle

PREFERRED

- ✓ Greatest potential for revitalization (e.g. King and Eagle 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 and Eagle

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 very long stretch of CP Rail track
- ✗ Requirement to reconstruct/relocate yard trackage and spur lines near Toyota
- ✗ Requires construction of new tunnel 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

K2+N2 King, Sportsworld, Maple Grove, Speedsville

NOT PREFERRED

- ✓ Opportunity for additional stop near Boxwood Business Park and Hunt Club developments
- ✓ Generous 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 to influence intensification and revitalization in the King & Eagle areas
- ✗ Longest travel time due to extra length of route, and 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, two bridges crossing Speed River and floodplain

Evaluation Results – Central Cambridge (C)

Legend

- Preliminary Preferred Route
- Endorsed* Stop
- Alternative Stop
- Potential GO Station
- Rail Corridor
- Significant Environmental Features
- Regulatory Floodplain
- Potential Property Impacts

*Endorsed by Regional Council in June 2011

Intersection is operating at capacity

C1 requires three at-grade rail crossings

C1a follows rail spur

Alternate Pinebush Stop for Alternative C1a+C2

New bus terminal at Cambridge Centre Mall will be served by LRT

Road widening for LRT contained within existing right-of-way, minimizes impact on Dumfries Conservation Area

Pinebush

Cambridge Centre Mall

Can-Amerra

Potential Property Impacts (partial and full takings)

C1+C2	65-85
C1a+C2	60-75

Preliminary Preferred Segment: C1a+C2

C1a+C2 Eagle, rail spur, and Hespeler

PREFERRED

- ✓ Avoids Hespeler Rd/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 and Hespeler Rd

NOT PREFERRED

- ✗ More expensive due to use of existing road corridors
- ✗ Significant impacts to the Hespeler Rd/Eagle/Pinebush intersection, including additional capacity issues and potential for queuing onto Highway 401 ramps
- ✗ Design challenges at Hespeler Rd/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 Rd/Eagle/Pinebush LRT Stop location not ideal for transfers to/from GRT

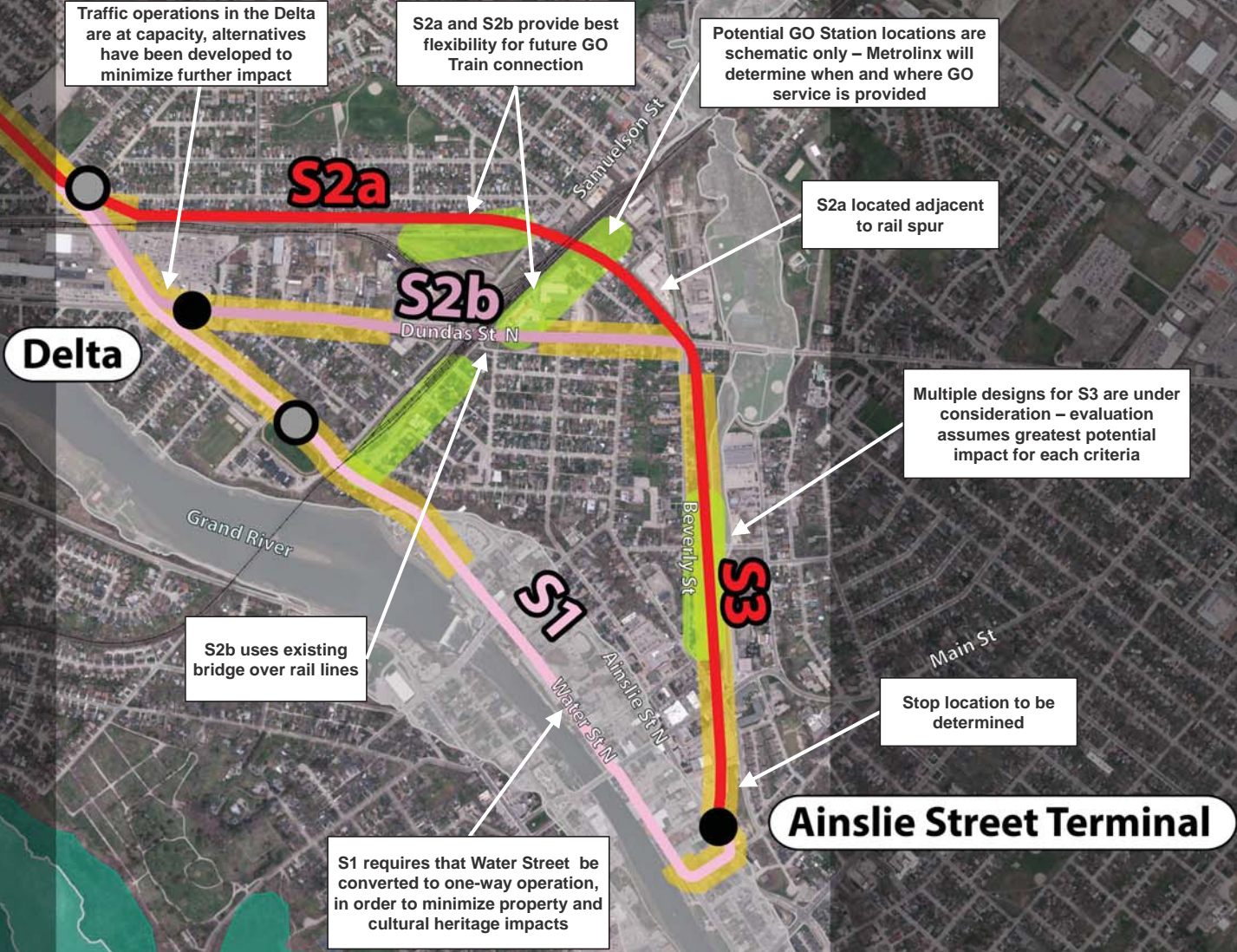
Evaluation Results – South Cambridge

Legend

- Preliminary Preferred Route
- Endorsed* Stop
- Alternative Stop
- Potential GO Station
- Rail Corridor
- Significant Environmental Features
- Regulatory Floodplain
- Potential Property Impacts

*Endorsed by Regional Council in June 2011

Potential Property Impacts (partial and full takings)	
S1	35-45
S2a+S3	55-70
S2b+S3	60-75



Traffic operations in the Delta are at capacity, alternatives have been developed to minimize further impact

S2a and S2b provide best flexibility for future GO Train connection

Potential GO Station locations are schematic only – Metrolinx will determine when and where GO service is provided

S2a located adjacent to rail spur

Multiple designs for S3 are under consideration – evaluation assumes greatest potential impact for each criteria

S2b uses existing bridge over rail lines

Stop location to be determined

S1 requires that Water Street be converted to one-way operation, in order to minimize property and cultural heritage impacts

Ainslie Street Terminal

Delta

Preliminary Preferred Segment: S2a+S3

S2a+S3 Hespeler Rd to Avenue, old CP Rail corridor, along Beverly **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
- ✓ 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 to Bruce and Ainslie

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
- ✗ 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 and Beverly

NOT PREFERRED

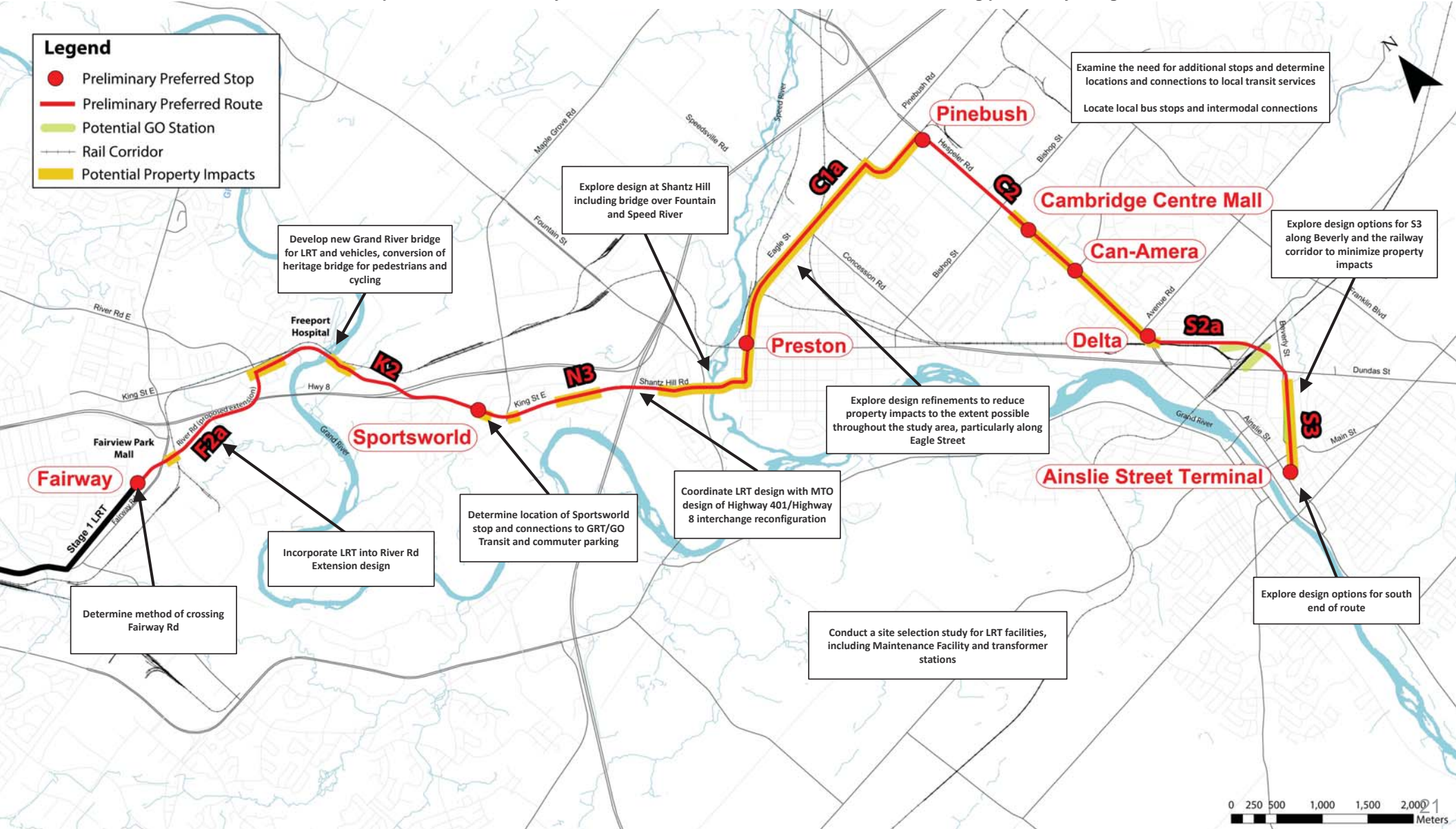
- ✓ Few impacts to heritage properties and buildings by avoiding Water, which is a narrow, built-up corridor
- ✗ Significant impacts to traffic at the Delta and on Dundas
- ✗ Most expensive to build (tied with S2a+S3) and operate
- ✗ Longer travel time due to roadways and intersection delays
- ✗ Many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

Preliminary Preferred Route

This map shows the Preliminary Preferred Route and the issues to be considered during preliminary design.

Legend

- Preliminary Preferred Stop
- Preliminary Preferred Route
- ▬ Potential GO Station
- Rail Corridor
- ▬ Potential Property Impacts



Examine the need for additional stops and determine locations and connections to local transit services
Locate local bus stops and intermodal connections

Explore design at Shantz Hill including bridge over Fountain and Speed River

Develop new Grand River bridge for LRT and vehicles, conversion of heritage bridge for pedestrians and cycling

Explore design options for S3 along Beverly and the railway corridor to minimize property impacts

Explore design refinements to reduce property impacts to the extent possible throughout the study area, particularly along Eagle Street

Coordinate LRT design with MTO design of Highway 401/Highway 8 interchange reconfiguration

Determine location of Sportsworld stop and connections to GRT/GO Transit and commuter parking

Incorporate LRT into River Rd Extension design

Conduct a site selection study for LRT facilities, including Maintenance Facility and transformer stations

Explore design options for south end of route

Determine method of crossing Fairway Rd

Structured Feedback Exercise

Join us for a structured feedback exercise to share your thoughts on the benefits and challenges of the Preliminary Preferred Route

Facilitated sessions will be held at:

2:45 pm

3:45 pm

4:45 pm

5:45 pm

6:45 pm

Structured Feedback Exercise

Join us for a structured feedback exercise to share your thoughts on the benefits and challenges of the Preliminary Preferred Route

Facilitated sessions will be held at:

4:45 pm

5:45 pm

6:45 pm

Structured Feedback Exercise

Positives

What do you like about the Preliminary Preferred Route –what are its strengths, advantages...what's good about it....what makes a lot of sense or resonates most strongly?

Enhancements

How can the 'positives' be made even better –how can the Preliminary Preferred Route be improved, refined, strengthened?

Objections

What do you dislike about the Preliminary Preferred Route – what are the weaknesses/ disadvantages, things that work less well, things that don't make sense to you or that are potentially problematic?

Remedies

How can your concerns or objections be addressed – how can perceived weaknesses/ disadvantages or flaws be mitigated, reduced or eliminated?

What Else?

What, if any, other comments, suggestions, ideas, feedback would you like to share?

What Happens Next?

- Project Team to review all public feedback
- Determine how and where the route will end (downtown Cambridge)
- Confirm the Preferred Route
- Finalize stop locations
- Determine location of Maintenance and Storage Facility (MSF)
- Complete preliminary design of the recommended route
- Consult with agencies
- Determine property requirements

Upcoming Activities?

- Present the preliminary design of the recommended route and associated information for feedback at Public Consultation Centre No. 3 (Fall 2017)
- Present recommended route to Regional Council for final authority to initiate the formal Transit Project Assessment Process (Late 2017)
- Start process for approvals (i.e. documentation for submission to the Ministry of the Environment and Climate Change)
- Address any comments submitted during the public or Minister of Environment and Climate Change's review periods
- Submit Provincial and Federal funding applications

Thank You for Attending

Your opinion matters!

Please provide feedback by March 17, 2017 using the comment sheet or one of the other methods below

E-mail: rtinfo@regionofwaterloo.ca

Website: www.stage2ION.ca

Phone: 519-575-4757 x 3095



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