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Item No. 11.1.7
Halifax Regional Council
September 22, 2015

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original signed by 

Richard Bytts, Chief Administrative Officer
Original Signed

Jane Fraser, Acting Deputy Chief Administrative Officer

DATE: August 4, 2015

SUBJECT: Improving Access to the Macdonald Bridge Bikeway

RECOMMENDATION REPORT

ORIGIN

- January 28, 2014 motion of Regional Council to “champion the development of a solution to the cycling connectivity challenges at the Halifax end of the Macdonald Bridge Bikeway”. This was further to a report on the “*Mayor’s Conversation on a Healthy Liveable Community*” held in fall 2013;
- Recommendation #19 of the Halifax Active Transportation Priorities Plan 2014 – 2019 that “The Municipality should continue to explore solutions to improving connections of the Macdonald Bridge Bikeway on both sides of the bridge, and aim to implement a solution on the Halifax side concurrent with the end of the re-decking project.”; and
- March 11, 2015 motion of Regional Council, Committee of the Whole to “Direct staff to develop options for the Bikeway Connection on both sides of the bridge. The options reviewed should include budget implications and partnership opportunities for the connection. Staff should then return to Regional Council for direction on the progress report by July 31, 2015 and include options for detailed design for inclusion in the capital budget for 2016/2017.”

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, clause 79 (1) (aa): “The Council may expend money required by the Municipality for (aa) streets, culverts, retaining walls, sidewalks, curbs and gutters;”

Halifax Regional Municipality Charter, subsection 61 (1): “The Municipality may acquire and own property granted or conveyed to the Municipality either absolutely or in trust for a public or charitable purpose.”

Halifax Regional Municipality Charter, section 79 (1): “The Council may expend money required by the Municipality for: (ah) playgrounds, trails...bicycle paths, swimming pools, ice arenas and other recreational facilities;”

RECOMMENDATION ON PAGE 2

RECOMMENDATION

It is recommended that Halifax Regional Council direct staff to continue planning bridge bikeway access improvements on both sides of the bridge, pursue funding partnerships and determine requirements for any land use agreements. It is recommended that on the Dartmouth side of the bridge, that staff continue to develop two options:

- 1) an access directly from the bikeway to Lyle and Dickson Streets which would connect with proposed bicycle routes into downtown Dartmouth and north end Dartmouth; and,
- 2) enhancements at the Wyse Road and the Nantucket intersection to facilitate improved access from the bridge bikeway to the street network and to a planned bicycle route through the Dartmouth Common to communities east of the bridge.

On the Halifax side, it is recommended that staff continue to develop a “flyover ramp” option that would also incorporate enhancements to the intersection of Gottingen and North Streets to facilitate access to the street network and origins and destinations in the north (e.g. north end of the peninsula), west (e.g. western mainland and peninsula west end) and south (e.g. commons, hospitals and universities)..

BACKGROUND

The Macdonald Bridge provides the only bicycling connection between the Halifax peninsula and Dartmouth and is therefore a critical link in Halifax’s evolving bicycle transportation network. It is a link in Halifax’s vision for a greenway trail network and is a designated section of the national Trans Canada Trail. It is also expected to be a key segment in the provincial Blue Route bicycling network.

Before 1999 people were required to walk their bicycles over the bridge on a single sidewalk shared with pedestrians. A separated bikeway and pedway were added to the bridge in 1999 as part of the addition of a third reversible lane and connection improvements for motor vehicles.

While the addition of a separated bikeway represented a significant improvement over the prior situation, access to the bikeway has been problematic since it was installed and is perceived as a deterrent to many people for riding over the harbour.

Existing Dartmouth Side Bikeway Connection

As illustrated in Figure 1, in Dartmouth the bikeway begins/ ends at a sidewalk, at a busy intersection, and there is no designated route connecting the bikeway to or from surrounding communities.

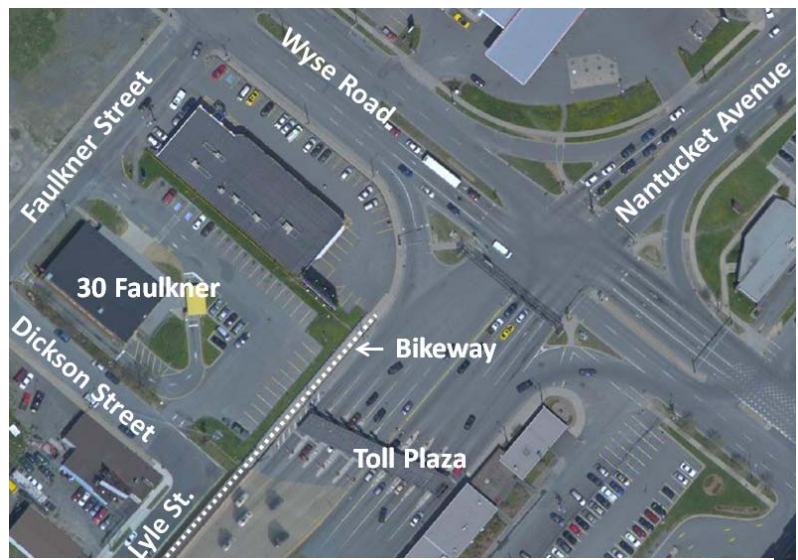


Figure 1: Existing Connection Dartmouth Side

Existing Halifax Side Bikeway Connection

As illustrated in Figure 2, in Halifax the bikeway begins and ends under the bridge at a sidewalk. Getting to this point when traveling to Dartmouth from North, Gottingen or Brunswick Streets involves going down a steep slope on North Street (the 'gully') shared with cars and buses before making a sharp left onto a sidewalk and then going up again, on a 10% slope.¹ Challenging grades coupled with the need to share a busy road makes the existing connection suitable only for experienced, confident bicyclists. Currently, the bikeway is also connected to downtown Halifax via the Barrington Active Transportation (AT) Greenway. It is envisioned that future enhancements would retain and improve this existing route.



Figure 2: Existing Connection Halifax Side

Previous Studies

Since installation of the bikeway and recognition that the access presented challenges, there have been three studies to consider how to improve access. These studies all focussed on the Halifax side of the bridge and none fully considered connections from the bridge bikeway to the proposed on-road bicycle route network. The studies were:

- 2001 CBCL consultants developed several potential options for improving Halifax side connections;
- 2006 CBCL was re-engaged and options were explored further; and,
- 2011 Harbourside Engineering developed another concept for a bridge to access the bikeway.

None of the options developed in these studies were advanced for further planning or consideration for funding, however, all of them inform the direction proposed in this report.

Active Transportation Priorities Plan

On September 9, 2014 Regional Council approved "*Making Connections: 2014-19 Halifax Active Transportation Priorities Plan*". The options proposed in this report support the implementation of this plan in the following ways:

- Improving access to the Macdonald Bridge Bikeway was identified by the public and stakeholders as their second highest priority project during community engagement for the Plan. (Developing a bicycle network in the Regional Centre was their top priority.);
- The Plan identifies the proposed bicycle routes that would connect to the Macdonald Bridge on the Dartmouth and Halifax sides; and,

¹ Implications of % **Slope** when riding a bicycle uphill:

- **0-4%** - requires little effort to ride up;
- **4-6%** - requires greater effort;
- **6-8%** - slopes are considered acceptable, but effort is required to maintain balance;
- **Over 8%** - climbing speed drops significantly; most people have trouble staying balanced.

- The plan recommends the development of bicycle infrastructure that is accessible for people of all ages and bicycling abilities (AAA). Currently neither side of the bridge can be considered “AAA”.

Macdonald Bridge Re-decking Project

In 2013-14, as part of discussions related to the Macdonald Bridge redecking project and direction from the Mayor's Conversation on a Healthy and Livable Community, staff began to consider how to improve access on the Halifax side, with a view to potentially implementing a solution that could align with the reopening of the bridge bikeway in late 2016. However, the timeline proposed in this report does not tie the implementation of improvements to bikeway access to the re-decking project. This is because staff concluded that additional planning work would be needed before there was sufficient information upon which a recommendation could be developed for Regional Council that would push this project beyond the timeframe for the re-decking project. It was also determined that there are no project integration efficiencies to be realized by co-ordinating bikeway access improvements with the re-decking project. In fact, the location of re-decking project work sites and shuttle locations may preclude construction of bikeway access improvements until the re-decking project is complete.

Origins and Destinations of Bikeway and Pedway Users

The broader scope requested by Council is further justified by a 2013 survey of the origins and destinations of Macdonald Bridge bikeway and pedway users by Dalhousie researchers (Attachment A). In addition to a concentration of destinations in downtown Halifax, the conclusions reveal a broad “catchment area” for trips to and from all directions. An average of about 500 people per day use the Bridge bikeway from April to October (inclusive).

DISCUSSION

This section of the report is broken down into three parts:

- 1) Description of options for improving bikeway connections on both sides of the bridge including preliminary budget implications (class D) where available;
- 2) Identification of potential partnership opportunities for the connections; and,
- 3) Establishment of a project plan, including timeline for further planning and decision-making.

1) *Bikeway Connection Options*

The explanations below describe several options for improving the bridge bikeway connections. There are preliminary cost estimates included (where available) or descriptions of the scope of work that may be involved.

All of the options described below, including the proposed connections to the broader bicycle network, require further study to determine whether or not they are feasible, assess their functionality, and to develop better cost estimates for Council's consideration. The cost estimates included are class D estimates from 2014. This information would be generated as part of the proposed continuation of functional planning.

The proposed planning approach will include analysis of how each option would connect to the proposed bicycle routes in the AT Plan. This will also entail some degree of functional planning of these broader connecting routes to ensure that they are feasible. This examination is to ensure that the recommended bikeway connection options lead to viable future bicycle routes.

Dartmouth Connection Options

While there have been a number of studies to consider how to improve access to the Macdonald Bridge bikeway on the Halifax side, there has been less attention to the Dartmouth side. This is partially because the challenges on the Dartmouth side are less complex. The bikeway currently begins/ ends on a sidewalk at the busy intersection of Wyse Rd., Nantucket Ave. and the Macdonald Bridge toll plaza without any facilities or guidance for accessing the road network or key destinations. The primary objective of any solution should be to make it easier for people on bicycles (of all ages and abilities) to navigate through or around this busy intersection.

The two options described below aim to provide connectivity to important Dartmouth origins and destinations via routes heading south, north and east from the bridgehead. Please see Attachment B for a diagram of the routes that are proposed in the 2014 AT Plan to connect to the bridgehead on the Dartmouth side.

i. Direct Connection to Proposed Lyle Street Local Street Bikeway from Bridge Bikeway

Connecting the bikeway directly to Lyle or Dickson Street is an option that would avoid the busy intersection of Wyse/Nantucket completely. Doing this may be feasible in the location shown on Figure 3, with a short ramp from the bikeway to the road, or by using the property of 30 Faulkner St. (owned by Halifax Harbour Bridges).

Once connected to Lyle Street, two candidate bicycle routes proposed in the AT Plan would make further connections to Downtown and North End Dartmouth (Note: Further analysis is required):

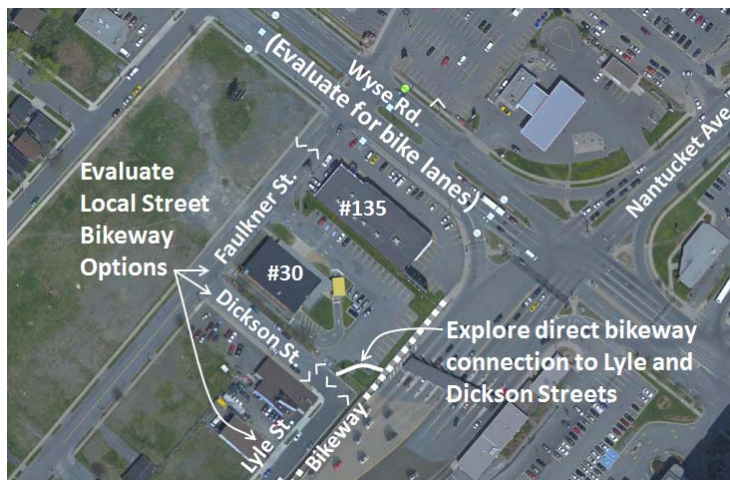


Figure 3: Connection to Lyle/ Dickson

- a) The proposed Lyle/ Shore Local Street Bikeway would use these quiet local streets to connect to Downtown Dartmouth via a proposed extension of the waterfront greenway trail from Geary Street to Alderney Landing.
- b) Dickson and Faulkner Streets could be used to connect to proposed bicycle lanes on Wyse Road which in turn would be connected to other destinations in North Dartmouth including Burnside Business Park via proposed local street bikeways identified in the AT Plan.

There are no cost estimates for this proposal. The work required for the connection (from the Macdonald Bridge to Lyle/Dickson) may entail modifications to the bikeway fence and construction of a short ramp on the property of 30 Faulkner Street or upon the road itself. Using 30 Faulkner would require an agreement regarding the use of this land with Halifax Harbour Bridges.

The “pros” associated with this option include:

- provides direct access to the street network and future on-street bicycle network;
- avoids the busy intersection of Wyse Road/Nantucket Avenue/Macdonald Bridge Toll Plaza; and,
- would be relatively inexpensive.

The “cons” associated with this option include:

- may require property agreement with Halifax Dartmouth Bridge Commission (or development of an unconventional road cross section); and,
- does not provide convenient access to communities east of the bridge

ii. Access from Bridge Bikeway to Sportsplex and Dartmouth Common

The 2014 AT Plan envisions a bike route ultimately connecting the Bridge Bikeway to Shubie Park making use of a mix of greenway trails and local streets. The first steps in achieving this connection would require some assessment of the Wyse/ Nantucket intersection to investigate any improvements that might facilitate crossing this busy intersection by bicycle. Then, a new greenway trail along the Sportsplex property from Nantucket Avenue to Thistle Street would connect to existing trails in the Dartmouth Common which are proposed under the AT Plan and Dartmouth



Figure 4: Dartmouth Connection Options

Common Plan to be upgraded to AT Greenways (3m wide, paved). These trails connect to the proposed local street network east of Victoria Road (e.g. Dahlia Street) which is in turn connected to existing Greenway Trails around Sullivan's Pond and Lake Banook heading to Shubie Park.

While there are no cost estimates for this option, the scope of work would include signage, pavement markings and minor curb work at the Wyse/ Nantucket intersection.

The “pros” associated with this option include:

- provides direct access to the street network and future bicycle route through Dartmouth Sportsplex, Dartmouth Common and points further east;
- could be implemented at a relatively modest cost for elements such as improved curb cuts, signage, and pavement markings.

The “cons” associated with this option include:

- may not provide convenient access to communities in the north end of Dartmouth and does not provide access to the planned local street bikeway on Lyle Street.

Halifax Connection Options

As noted above, the context on the Halifax side of the bridge is more challenging than the Dartmouth side. It is compounded by the current access point being under the bridge (not at grade with the bridge entry), the steepness of the access points, high volume of motor vehicles, and the complex intersections. The goal of the option presented here includes making connections between the Bridge bikeway and nearby candidate bicycle routes in the AT Priorities Plan (Attachment B). On the Halifax side the focus would be on providing access to origins and destinations to the north, west and south. There would also be improvements considered to the existing route to access the Barrington AT Greenway into downtown.

The recommended option on the Halifax side is a flyover ramp. The flyover ramp could extend from the bridge bikeway to Lorne Terrace (entrance to CFB Stadacona) or a longer version could extend from the bridge bikeway to a point between Gottingen Street and the bridgehead. For both options consideration is required on how people on bicycles would access the flyover ramp from the intersection of Gottingen and North Streets.

The two options for flyover ramps are:

i. Flyover Ramp to Lorne Terrace and Bikeway to Gottingen

As illustrated in Figures 5 and 6, this option proposes a bow shaped bridge that begins at the existing bikeway just above the west pier of the Macdonald Bridge (about 10m above North Street). From here it follows the curve of North Street and descends for 90m at a gentle slope (3%) to land just before Lorne Terrace (entrance to CFB Stadacona). From this point a two-way bikeway would be explored in the green space in the North Street right-of-way between North Street and CFB Stadacona and connecting to Gottingen Street.



Figure 5: Flyover to Lorne Terrace/ Bikeway to Gottingen



Figure 6: Rendering of Flyover Ramp to Lorne Terrace

This option would avoid the 10% slope from the bridge but would require the use of CFB Stadacona property, including the relocation of a large stone privacy wall. There may also need to be modifications to the Gottingen / North Street intersection to make the final connection to the painted bicycle lanes on North Street proposed in the AT Plan. It would provide good access from origins and destinations in the north (e.g. north end of the peninsula), west (e.g. western mainland and peninsula west end) and south (e.g. commons, hospitals and universities).

Class "D" estimates in 2014 put the cost for the flyover at approximately \$2,000,000. There would also be costs to construct a 160m bikeway from Lorne Terrace to Gottingen Street, and potentially costs related to modifying the North and Gottingen intersection, if needed.

The “pros” associated with this option include:

- the slopes on the flyover ramp are manageable; and,
- the estimated cost is lower than the other flyover option.

The “cons” associated with this option include:

- a property agreement with the Department of National Defense would likely be required in order to relocate the stone wall between North Street and the Admiral's House on CFB Stadacona and for a portion of the two-way bikeway in the green space in the North Street right-of-way between North Street and CFB Stadacona.;
- The estimated cost of \$2,000,000 is still relatively high, although less than the other flyover ramp option.

ii. Flyover Ramp to North Street Median and Bikeway to Gottingen

As illustrated in Figures 7 and 8, this option employs a bridge that begins at the western abutment of the existing bikeway and then curves and rises for 160m at a very steep slope (10.5%) and lands on the North Street median, about 30m before the intersection with Gottingen Street. Consideration of intersection redesign at North/ Gottingen to accommodate a 3m bikeway at the tip of the median would be needed, as would the consideration of a bicycle traffic signal to facilitate access to the median. This option would be further studied to determine if the slope could be reduced and if it would be preferable to land it in the green space on the north side of North Street, instead of in the median.

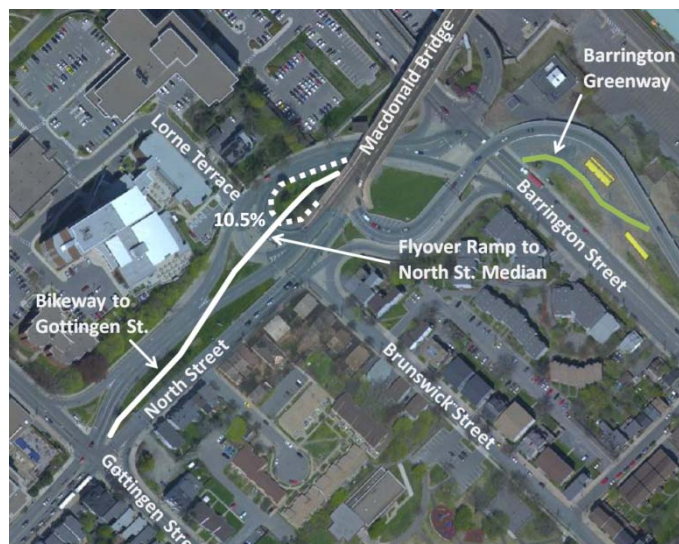


Figure 7: Ramp to Median and Bikeway to Gottingen

This option would provide good access from origins and destinations in the north (e.g. north end of the peninsula), west (e.g. western mainland, peninsula west end) and south (e.g. commons, hospitals and universities).



Figure 8: Rendering of Flyover to North Street Median

The Class “D” estimated cost of this option from 2014 is \$2,700,000 plus work to construct a 30m bikeway as well as potentially intersection work at North/ Gottingen.

The “pros” associated with this option include:

- it would avoid all conflicts with other road users at the bridgehead; and,
- it could land either on the median as shown in the diagrams or potentially in the green space between North Street and the CFB Stadacona wall, thus giving flexibility for how to manage the transition from the street network at the intersection of North and Gottingen.

The “cons” associated with this option include:

- this is likely the most expensive option;
- as currently conceptualized, it would have a section that is considered too steep. Further planning would explore if a modified design could mitigate this.

Zig Zag Ramp Alternative

This option is not recommended, but is presented as an alternative for Council to consider. It consists of a 130m ramp with a moderate slope of 5% from the end of the bikeway (directly under the bridge) up to the crosswalk at the Barrington Ramp on the pedestrian side of the bridge. At this crosswalk, cyclists would dismount and walk over to Brunswick St. to proceed south, or walk over to the north side of North St. (via crosswalks) to proceed westbound in mixed traffic. Brunswick could also help to access points west via a path on the George Dixon Centre lands and a local street bikeway on Charles Street proposed in the AT Plan. This connection avoids the North St. “gully” between Brunswick and Barrington and continues to use the existing 10% slope ramp to access the bikeway.



Figure 9: Zig Zag Ramp



Figure 10: Rendering of Zig Zag Ramp

It is estimated this ramp would cost (Class D) approximately \$300,000. There may be additional costs to improve the trail on the George Dixon Centre property to connect with the proposed Charles Street local street bikeway.

The “pros” associated with this option include:

- this is the least expensive option;
- this would provide access to Brunswick Street and to a potential bicycle route on Charles Street via the George Dixon Centre.

The “cons” associated with this option include:

- people on bicycles would still have to access the bridge bikeway from under the bridge which involves steep slopes and an indirect route;
- this option is not a significant improvement over the existing access .

Improvements to Existing Connection

In addition to the above options to improve access from Gottingen Street, enhancement to the existing connection could be studied and implemented as part of this project.

Improvements could include designating the existing sidewalk leading to the bikeway as a multi-use facility and providing more space for Halifax Transit passengers at the bus stop under the bridge. There could also be improved wayfinding signage at this location.

The existing route provides access to CFB Halifax, the Dockyard, and the Barrington AT Greenway trail connection to downtown Halifax. The Barrington Greenway is a designated Trans Canada Trail route and is very likely to be a candidate for the provincial Blue Route bicycling network.

There is no cost estimate for these potential changes, but they would likely entail minor concrete work and signage.

At-Grade Connections

An at-grade connection to the bikeway is not being proposed as an option. An at-grade option would involve opening up the fence that currently separates the bikeway and the right-turn slip lane off of the Macdonald Bridge and installing a crosswalk. The geometry of this slip lane results in drivers having insufficient sight distance to be able to see and react to conflicts that would be created by an at-grade bicycle or pedestrian crossing. While warning lights can provide some risk reduction in unavoidable conflict situations, it is poor practice to create these risky situations when other options are available.

2) Partnership Opportunities

The types of partnerships that are required to complete the design and implement this project are varied. To date, there have been preliminary discussions with potential project partners. These include:

Halifax Harbour Bridges - HHB (Halifax Dartmouth Bridge Commission). Any connectivity improvements would require close co-ordination with HHB. Some of the proposed options would require making direct connections to the bridge bikeway and others may also require use of Bridge Commission property. Any changes to the intersections at either end of the Macdonald Bridge would have to be co-ordinated with HHB. To date, there have been preliminary discussions with HHB staff and they are open to working with the municipality on this project. With regards to cost-sharing any potential improvement, a formal request would need to be made to their board of commissioners.

Department of National Defense (CFB Halifax). One of the alternatives to improve connectivity on the Halifax side would require the use of DND property abutting North Street including the relocation of a decorative stone wall. Preliminary discussions have been held with DND staff who expressed an openness to work with HRM on this project. DND would not be approached as a funding partner.

Trans Canada Trails (TCT). This organization is mandated with the development of a trail from coast to coast to coast by 2017. The proposed route in Halifax includes the Macdonald Bridge. Initial discussions have taken place with TCT representatives who were generally supportive of the project. Improving the access to the Macdonald Bridge bikeway may be eligible for funding for both planning and construction, should it meet the 2017 deadline for completion.

HRM Parks and Recreation The municipality is planning for considerable capital upgrades to the Dartmouth Sportsplex. Consideration for a bikeway connection through this property, between the Dartmouth Common and the Macdonald Bridge Bikeway is being considered in the final design planning for this project.

The following potential partners have been identified, but there have not yet been any discussions:

Province of Nova Scotia The Province has made increasing commitments to sustainable and active transportation in recent years, so such a project may align with their objectives. They have also provided annual funding to active transportation projects via the NS Moves program and the current Connect2 program. This project would also support the development of the provincial Blue Route bicycle network.

Government of Canada From time to time, the Government of Canada implements infrastructure programs for which active transportation infrastructure is eligible. Recently the federal government announced the Canada 150 Community Infrastructure program.

Federation of Canadian Municipalities Green Municipal Fund This fund provides grants to support plans and offers low interest loans for capital projects in a number of categories, including transportation.

Other potential partners may be identified during further planning work.

Multiple HRM departments would be required to partner in the planning and implementation of the project.

3) *Project Plan*

As described above, improving connectivity to the Macdonald Bridge bikeway on both sides of the harbour is essential if the municipality is to attain objectives for a complete and connected bicycle route network that is accessible to the widest range of residents. While efforts to improve this connectivity present a range of challenges, there are solutions.

This project plan does not align with the Macdonald Bridge redecking project and the projected reopening of the bikeway in late 2016. This is primarily due to the time and effort still required to identify and design the preferred options. However, opportunities to accelerate implementation of some of the options to align with the reopening of the Bridge Bikeway will be considered in further planning work. For example, some of the options on the Dartmouth side and the enhancement of the existing connection on the Halifax side may be achievable to coincide with the reopening of the Bridge bikeway.

To advance this project, the current proposed project plan and timeline consists of:

Task	Fall 2015	Winter 2016	Spring 2016	Summer 2016	Fall 2016	Winter 2017	Spring 2017	Summer 2017
Continue Functional Planning -Identify preferred bridge connection options; -Assess viability of proposed broader connecting bicycle routes on Dartmouth/Halifax sides; -Develop class 'C' cost estimates; -Engage public and stakeholders; -Start discussions with potential funding partners.								
Report to Regional Council -Update on relevant aspects of project; -Seek direction on options to pursue; -Seek endorsement to proceed to detailed design.								
Detailed Design -Solidify land agreements; -Produce tender drawings; -Class "A" cost estimates; -Continue discussions with potential funding partners as required.								
Budget -Consideration in HRM Capital Budget; -Solidify funding partnerships.								
Construction -Pending Council Approval.								

FINANCIAL IMPLICATIONS

Estimated cost for additional functional planning and public engagement: \$50,000-\$100,000 Source: 2015/16 Approved Project Budget for Project No.CTU00420 "Active Transportation – Strategic Projects", from existing line item: "Design/Public Engagement of Regional Centre Bikeways".

The proposed Spring 2016 report to Council will have more detailed cost estimates for future design requirements. That report will also contain more detailed cost estimates for both the connection options to Macdonald Bridge Bikeway as well as estimates for the connections to the broader bicycle network.

If approved by Council it is anticipated that funds for detailed design of bikeway connection options would be identified in the 2016/17 HRM Proposed Project Budget for Project No.CTU00420 "Active Transportation – Strategic Projects (With potential partner funding from some of the groups identified in part 2 of the Discussion above).

It is anticipated that funds for construction of bikeway connection options would be identified in the 2017/18 HRM Proposed Project Budget for Project No.CTU00420 "Active Transportation – Strategic Projects (With potential partner funding from some of the groups identified in part 2 of the Discussion above).

The impact of dedicating funding for the bikeway connection from the AT funding envelope on other AT priorities would be felt primarily in the 2017/18 fiscal year when construction is currently forecast to take place. As the proposed budget for AT Strategic Projects for 2017/18 is \$1,200,000, this would likely mean that additional funding will be required and no other AT capital projects could be funded from Project No. CTU00420 – "Active Transportation – Strategic Projects" during this year. This would depend

on factors such as the final scope of the project, the amount of partner funding committed and the funding level that Council is willing to commit to this budget in 2017/18. It is expected that more information will be available on this by Spring 2016 in the update report to Council.

COMMUNITY ENGAGEMENT

As noted above, public engagement for the Active Transportation Priorities Plan identified improving the Halifax bikeway connections to the bridge as a high priority. Improving the Dartmouth bridge connection was also identified as an issue. As noted above, key stakeholder organizations have indicated their support for the project, at least in principle.

A key part of the functional planning process will be stakeholder and public engagement.

ENVIRONMENTAL IMPLICATIONS

This project is intended to make it easier for residents to travel by bicycle for utilitarian trips (e.g. to work, school, or to access shopping and services). If more residents chose active transportation over motor vehicles, there will be associated reductions in greenhouse gas and air pollutant emissions.

ALTERNATIVES

Regional Council may direct staff to not pursue further planning work to improve access to the Macdonald Bridge Bikeway. This is not recommended for reasons identified in this report.

Regional Council may direct staff not to pursue one or more of the options described for either the Dartmouth or Halifax side. This is not recommended since access to the bridge bikeway from all directions and communities of the municipality is required to meet Active Transportation Priorities Plan objectives.

Regional Council may direct staff to continue to pursue the zig zag ramp option for the Halifax side. Staff does recommend this option as it provides only a minimal improvement from the existing access.

ATTACHMENTS

Attachment A: Origins and Destinations of Macdonald Bridge Bikeway and Pedway Users

Attachment B: Proposed Network Connections to Bridge Bikeway

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/agenda.php> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

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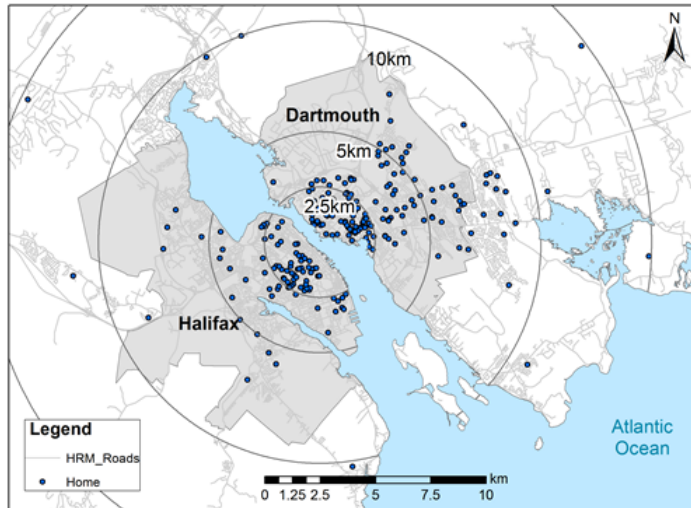
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Report Approved by: _____
Bruce Zvaniga, Director, Transportation and Public Works, 902.490.4855

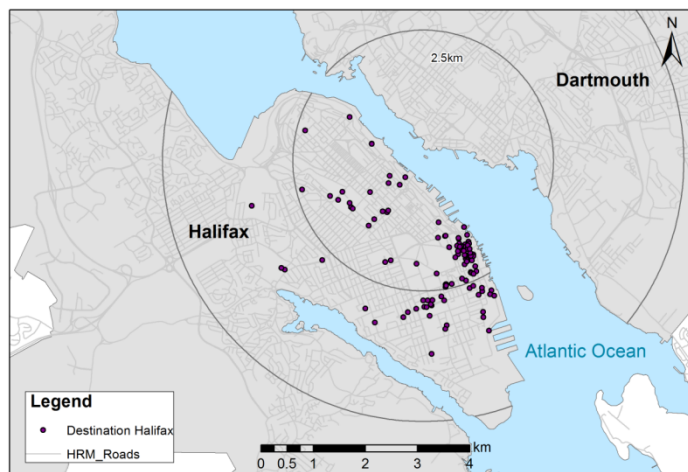
Attachment A: Origins and Destinations - Macdonald Bridge Bikeway & Pedway Users

From: "Macdonald Bridge Renewal Project: Survey of Cyclists and Pedestrians", Dr. Ahsan Habib and Dillon Coyle, Dalhousie University, 2013

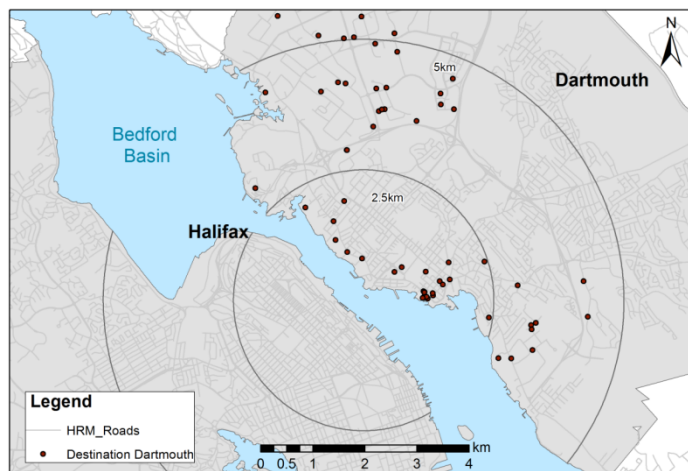
Origins of Bridge Bikeway and Pedway Users



Commute Destinations in Halifax

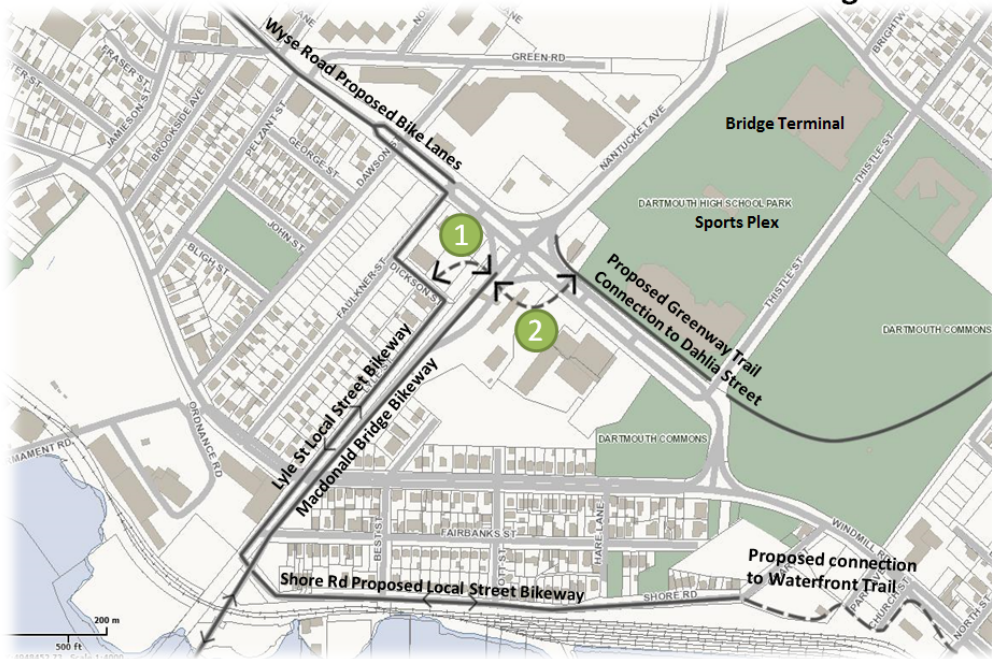


Commute Destinations in Dartmouth



Attachment B: Proposed Network Connections to Bridge Bikeway

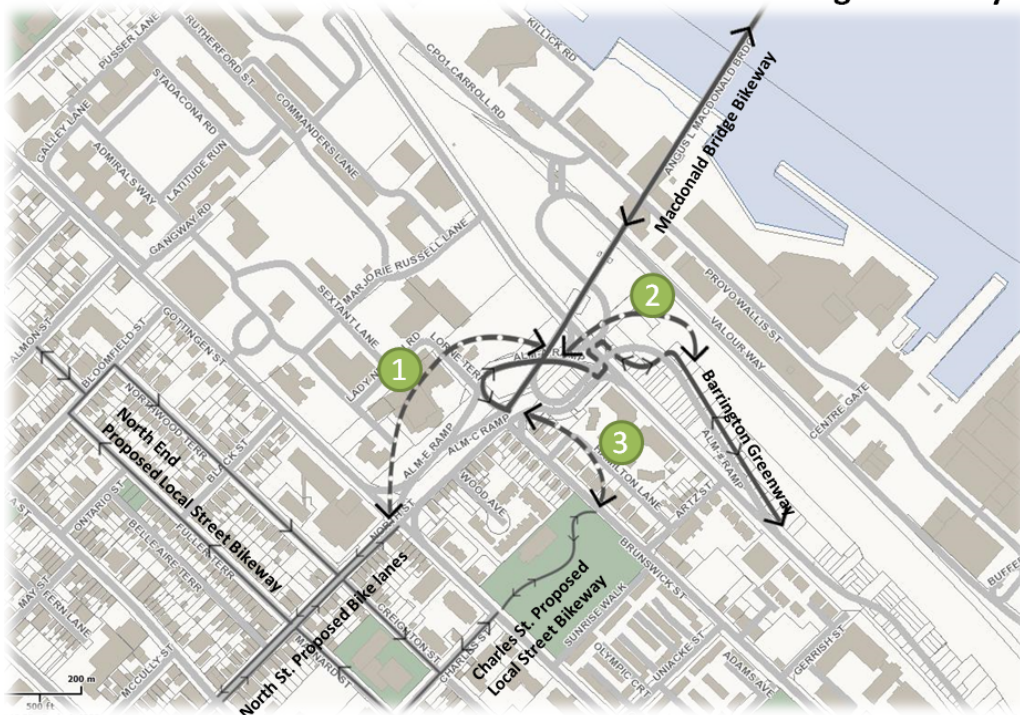
Dartmouth Side Network Connections to Macdonald Bridge Bikeway



1 Connection to Lyle/Shore Proposed Local Street Bikeway and to Wyse Road Proposed Bike Lane

2 Connection to Dartmouth Common and Beyond

Halifax Side Network Connections to Macdonald Bridge Bikeway



1 Connection to Proposed Bike Lanes on North Street

2 Connection to Barrington Greenway

3 Connection to Charles Street- Proposed Local Street Bikeway