HALIFAX
REGIONAL MUNICIPALITY

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Active Transportation Advisory Committee
May 16, 2013

TO: Chair and Members of the Active Transportation Advisory Committee

SUBMITTED BY: Original Signed
Jane Fraser, Director, Planning and Infrastructure

DATE: April 18, 2013

SUBJECT: **North-South Peninsula Cycling Corridor (Cross Town Connector)**

ORIGIN

November 2, 2010, Regional Council item 11.1.3: "Halifax Cycling Coalition Petition – Cross Town Connector Proposal".

Council directed staff to: "pursue the implementation of a Cross Town Connector bike lane on the peninsula and to return to Council with a recommendation following route evaluations, public consultation and recommendation by the Active Transportation Advisory Committee and Peninsula Community Council."

LEGISLATIVE AUTHORITY

Part V of the Motor Vehicle Act, including sections 89 and 90. Clause 79 (1) (aa) of the Halifax Regional Municipality Charter provides that Council may expend money required by the Municipality for streets, culverts, retaining walls, sidewalks, curbs and gutters.

RECOMMENDATION

It is recommended that the Active Transportation Advisory Committee recommend to the Transportation Standing Committee the approval of the Windsor-Vernon-Seymour bike route option, with the sub-option to continue the bike lanes up to the intersections of Almon Street and North Street, as the first of up to three designated north-south on-road cycling corridors on the peninsula.

BACKGROUND

The HRM Active Transportation Functional Plan, approved in 2006, identifies a number of candidate streets for consideration for bike routes on the peninsula. Since the approval of the plan, new bike lanes have been added on a small section of Windsor Street north of Young Street, a section of Lower Water Street, and on Bell Road and South Park Streets. Segments of Active Transportation Greenway have been built adjacent to Barrington Street, Beaufort Avenue and Trollope Street. While these facilities are beneficial, they need to be connected to serve as an effective bike route network.

The modal share of cycling to work for residents on the peninsula is relatively high compared to other parts of the municipality. According to the 2006 Census, 4.6% of residents in Halifax's north end commuted to work by bike (and 34% walked). Other parts of the peninsula have similarly higher proportions for walking and cycling. For most other parts of the municipality, less than 1% of residents cycle to work.

Screenline counts conducted on the peninsula during spring and fall each year have found that there are about 1,500 cyclists crossing the peninsula during the morning and evening rush hours. This number appears to be growing slightly. There are also approximately 600 cycling trips across the Macdonald Bridge each day.

Development of a north-south bike route on the peninsula is supportive of the HRM Regional Plan objectives to increase the sustainable transportation modal share and provides a sustainable transportation option to support proposed increased population density on the peninsula.

DISCUSSION

Five candidate routes were assessed under this project:

1. Connaught Avenue;
2. Windsor-Vernon-Seymour Streets;
3. Agricola Street (a corridor from Leeds Street to Cogswell Street, also incorporating Highland Avenue and North Park Street);
4. Novalea Drive - Gottingen Street; and
5. North End Local Street Bikeway, using local streets between Agricola and Gottingen Streets from Leeds Street to either Cornwallis Street or Cogswell Street.

The detailed findings of this assessment may be found in Attachment A: *Final Report.*

Evaluation of Options for a North – South Peninsula Cycling Corridor: Each route was assessed against criteria in the table below. Other components of the assessment process included:

1. Review of current best practices and professional guidelines;
2. Identification of bike route facility-types to be considered (e.g. painted bike lane, local street bikeway, cycle track, etc.);
3. Functional design of candidate routes;

4. Review by HRM groups such as the Traffic Authority, Municipal Operations and Fire & Emergency Services;
5. Consideration of other HRM plans and processes; and
6. Cost analysis.

The results of the assessment process are summarized on the table below and the details of each route assessment are covered in the attached report. The following symbols are used to summarize the rankings:

●	Route is well suited for a bike route according to this criterion.
◐	Route is suited for bike route according to this criterion, however there are limitations. Some of these limitations may be addressed with additional measures.
○	Route is less-well suited for a bike route according to this criterion. Additional measures are probably required to compensate for limitations if bike route implemented.

Candidate Routes / Criteria	Connaught	Novalea Gottingen	North End Local Street Bikeway	Agricola	Windsor Vernon Seymour
Connectivity					
Origins / Destinations	◐	●	●	●	●
Proximity to existing AT	○	●	◐	●	●
Proximity to future AT	●	●	●	●	●
Loss of on-street parking	○	○	●	○	○
Demand for commercial parking	●	◐	●	○	◐
Demand for residential parking	◐	●	●	◐	●
Availability of parking alternatives	◐	◐	●	○	●

Candidate Routes Criteria	Connaught	Novalea Gottingen	North End Local Street Bikeway	Agricola	Windsor Vernon Seymour
Intersections					
Complex / busy intersections	○	○	◐	◐	○
Street Characteristics					
Flat grades	◐	●	●	●	●
Traffic volumes	○	○	●	◐	◐
Trucks / Buses	◐	○	●	◐	◐
Bicycle Volumes	○	◐	●	●	●
Public and Stakeholder Feedback					
	○	○	◐	●○	●

Following initial assessment and public and stakeholder consultation, the Connaught and Novalea/Gottingen options were eliminated by the Active Transportation Advisory Committee. The rationale for their elimination included their limited support by the public and stakeholders, the high volume of vehicles and buses, and the availability of alternatives.

Three routes were retained for functional design, further study and further public engagement. The North End Local Street Bikeway and Agricola Street routes were assessed as the options to serve the east side of the peninsula. The Windsor-Vernon-Seymour route was assessed as the option to serve the central part of the peninsula.

Even though the North End Local Street Bikeway option ranked highest against assessment criteria and is the preferred route for a north-south cycling corridor on the east side of the peninsula, it cannot be recommended at this time. This is due to the lack of a formal policy to guide the consideration and implementation of this facility-type. Therefore, a recommendation to implement the North End Local Street Bikeway will be deferred until HRM develops such a policy.

The North End Local Street Bikeway needs design elements associated with traffic calming to be fully effective. Although such traffic calming elements can be implemented through the approved Neighbourhood Short-cutting Policy, this policy, as written, does not allow that consideration to be extended to streets planned to become local street bikeways. Policy

measures to link traffic calming measures to local street bikeways will be considered through the Active Transportation Plan Review process, expected to be completed by the end of 2013.

Windsor-Vernon-Seymour Option

This route option would begin in the north at Young Street and extend south to University Avenue on a route using Windsor Street, the former St. Patrick's High School, Quingate Place, Vernon Street and Seymour Street. Characteristics of this route are:

- A painted bike lane from Young Street (where the existing bike lane on Windsor Street ends) to the area behind the former St. Patrick's High School near Welsford Street.
- There are **two sub-options** for intersection treatments at Almon and North streets:
    1. Continue the bike lanes up to the intersections and reduce the motor vehicle lanes. This would provide a continuous bike route. Traffic modeling indicates that this would result in slightly increased delays and queue lengths for motor vehicles and such changes can potentially result in infiltration of commuter traffic onto local streets, as motorists search for a quicker route to their destination. However, the intersections would continue to operate within HRM acceptable limits.
    2. Discontinue the bike lanes in advance of the intersections and add pavement markings (sharrows) and signage to help cyclists position themselves and to maintain visibility and route continuity. This option would have no impact on motor vehicle delays and queue lengths; however, it would be less advantageous to cyclists.
- The bike lanes would not continue through the intersection of Windsor-Cunard/Chebucto, as traffic modeling indicates that significant vehicle delay would result from the removal of turn lanes. Rather, pavement markings (sharrows) and signage would be added to help cyclists position themselves and to maintain visibility and route continuity. Options to continue the lanes through the intersection would be considered if and when that intersection is redeveloped.
- A total of 76 on street parking spaces would be removed north of Welsford Street. Occupancy of on-street parking was observed to be generally low. New short-term parking (one or two hour spots) could be installed on Duncan, Lawrence, Allan and Compton Streets, to help replace short-term parking removed in this small commercial area. This new short-term parking would replace areas where there are currently no restrictions.
- One taxi stand would be removed near the Halifax Forum and relocated.
- A connection between Windsor and Vernon Streets, using the north side of the former High School property and Quingate Place, would be developed in conjunction with the transition plan for the property.
- Vernon and Seymour Streets would initially continue to be signed bike routes. This section would be a candidate for conversion to a local street bikeway type, if an enabling policy were approved.

The cost of installing bike lanes on Windsor Street between Young and Welsford Streets would be approximately $20,000.

This option provides a continuous north-south cycling corridor in the centre of the peninsula. It is already popular with cyclists, is connected to a wide range of origins and destinations, and has

a favourable slope and moderate traffic volumes. This route was the second choice of attendees at public engagement sessions.

Agricola Street Option

This route option would begin at Leeds Street in the north and travel south on Highland Avenue, then on Agricola Street, and finally on North Park Street. It would connect with the Trollope Street AT Greenway at Cogswell Street for further connections south. Characteristics of this route are described in section five of the attached report, but the central section would consist of a painted bike lane between Young and Cunard Streets.

This option provides a continuous north-south cycling corridor on the east side of the peninsula. It is already popular with cyclists, connected to a number of origins and destinations, has favourable slope and moderate traffic volumes with no bus routes. It is a truck route and is used regularly by emergency vehicles. This route was the first choice of attendees at public engagement sessions and of a number of stakeholder groups, including the Halifax Cycling Coalition. This route was opposed by the North End Business Association (NEBA) due to the need to remove almost 75% of the on-street parking currently available on Agricola Street and the potential impact that this would have on the viability of their businesses.

This route is not recommended for implementation at this time due to the availability of an alternative north-south route on the east side of the peninsula (North End Local Street Bikeway), and due to almost unanimous opposition to the removal of on-street parking by abutting business owners and operators. The Agricola Street option could be reconsidered if the Local Street Bikeway option cannot be pursued (i.e. if enabling policy is not approved) or is implemented and found to be ineffective. Any reconsideration of the Agricola Street option should incorporate an area parking management component.

FINANCIAL IMPLICATIONS

Funding to implement recommendations from this project has been made available through the annual 2013/14 budget process for Project Acct No. CTU00420 - Active Transportation Plan Implementation. Budget availability has been confirmed by Finance.

Budget Summary:

Project Acct. No. CTU00420 - Active Transportation Plan Implementation	
Cumulative Unspent Budget	$1,768,998.51
Less: Installation of Bike Lanes	**$ 20,000.00**
Balance	$1,748,998.51

COMMUNITY ENGAGEMENT

The community engagement activities included:

- Fall 2011: Stakeholder meetings with the North End Business Association, Halifax Cycling Coalition, Ecology Action Centre and Sustainable Transportation Task Force (Attendance +/- 70).
- March and April 2012: Two open public engagement sessions (Attendance +/- 180).
- August and September 2012: Four public rides of candidate routes (Attendance +/- 55).
- September 2012: two public workshops to consider the broader network of bike routes on the Halifax peninsula (Attendance +/- 40).
- January 2013: follow-up meetings with stakeholder groups including the North End Business Association, Halifax Cycling Coalition, Ecology Action Centre, Halifax Community Health Board (Attendance +/- 40).

Some key points from those meetings with stakeholders and the public included:

- Unanimous views that more cycling facilities are required on the peninsula and HRM generally, and that HRM should act soon.
- The North End Business Association (NEBA) opposed bike lanes on Agricola St. due to the loss of on-street parking and concerns about the safety impact (on cyclists) of loading. NEBA suggested and supported a parallel local street route and expressed general support of increased cycling and walking in their district. There were a small number of businesses that independently expressed support for a bike lane on Agricola Street.
- Halifax Cycling Coalition and others advocated for the Agricola Street option.
- The survey at public consultation sessions identified Agricola as the preferred route by attendees. Windsor was a strong second. The same survey found some support for the local street bikeway route option.
- Attendees expressed that the selected route should accommodate young people, seniors and new cyclist and that it should be connected with other parts of the bike network.

ALTERNATIVES

There are a number of alternatives to the recommended option that were examined in the assessment (Attachment A). These are:

1) Approve the Windsor-Vernon-Seymour route with the sub-option to discontinue the bike lanes in advance of the intersections at North and Almon Streets. This is not recommended because it is less advantageous for cyclists and because the intersections will still operate within HRM acceptable limits with the bike lanes extending up to the intersections;
2) Approve the Agricola Street option as described in the attached report. This is not recommended due to almost unanimous opposition by abutting businesses to the loss of on-street parking and because there is another potential option for a north-south bicycle route on the east side of the peninsula; and

3) Do not approve any north-south route. This is not recommended because of strong public and stakeholder views that HRM needs to act to develop bike routes on the peninsula and because this would hinder Active Transportation Functional Plan objectives to develop a connected bicycle network.

ATTACHMENTS

Attachment A: *Final Report. Evaluation of Options for a North – South Peninsula Cycling Corridor*

A copy of this report can be obtained online at http://www.halifax.ca/boardscom/ActiveTransportationAdvisoryCommitteeAgendas.html then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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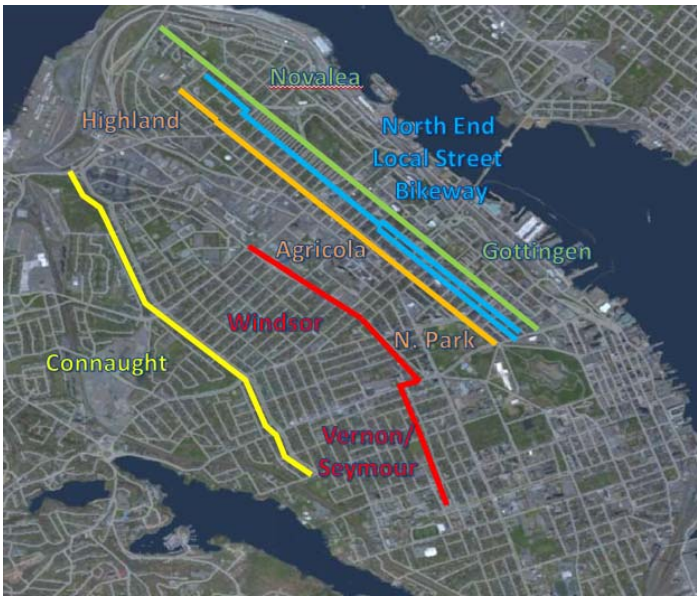
Report Approved by:	David McCusker, Manager Strategic Transportation Planning 490-6696
Report Approved by:	Manager, Planning Services, 490-6717

Final Report

Evaluation of Options for a North – South Peninsula Cycling Corridor



Prepared by: Strategic Transportation Planning

Halifax Regional Municipality

March 2013

CONTENTS

1. INTRODUCTION

This report describes five options for a north-south bike route on the Halifax peninsula, details the assessment process used to evaluate these options, and recommends one route in the centre of the peninsula for approval and implementation.

The recommended option is a 2.8 km route following Windsor, Vernon and Seymour Streets. This route would provide a central cycling spine on the peninsula connecting a number of origins and destinations. The route would consist of painted bicycle lanes on Windsor Street starting in the north from the existing bike lanes which currently end at Young Street to a location just south of Welsford Street. At that point, there would be a connection to Quingate Place using the north side of the former St. Patrick's High School property (via an off street path that would need to be built). From Quingate, the route would connect with Vernon and then Seymour Streets. Vernon and Seymour would be candidates for conversion to a "Local Street Bikeway" once a policy to consider this facility type was in place. The route would end at Dalhousie University. Implementation of some route elements would begin immediately after approval (e.g. painted bike lane on Windsor Street) and other components would be added as soon as possible.

While this project began with a goal to recommend one north-south bike route (or "Cross Town Connector") on the Halifax peninsula, it became integrated into the process to identify the priority routes for the entire peninsula bike route network as part of the Active Transportation Plan Review. Input from stakeholders and the public, as well as a review of best practices from other jurisdictions, indicate that a number of connected "cross town" east-west and north-south routes are needed.

In considering the peninsula bike route network, the Windsor-Vernon-Seymour corridor becomes a central north-south bike route. Two options for a north-south corridor on the east side of the peninsula (Agricola Street and North End Local Street Bikeway) are presented and evaluated in this report and potential future east-west routes are also referenced in the route evaluations. A network of bike routes, with broad coverage of the peninsula, is required to attract more residents to cycling.

Project Objectives

The objectives of this project were to:

- Identify, plan and implement at least one north-south cycling route;
- Implement a route that attracts more residents to cycling; and,
- Support other municipal initiatives (e.g. Regional Plan, Centre Plan, Open Space planning, Stepping up Physical Activity Strategy).

2. BACKGROUND

ORIGIN OF THE PROJECT

At the July 6, 2010 Regional Council meeting, Councillor Watts presented a petition on behalf of the Halifax Cycling Coalition (HCC) with 1,418 signatures in support of "the installation of an active transportation corridor in the form of a bike lane that connects South End Halifax to the North End and (eventually) Bedford" with the planning and implementation of the corridor by the end of 2011 (Item 9.2.3). On November 2, 2010, Regional Council directed staff to pursue the implementation of a Cross Town Connector bike lane on the peninsula and to return to Council with a recommendation following route evaluations, public consultation and recommendation by the Active Transportation Advisory Committee and Peninsula Community Council (now Halifax and West Community Council).

HRM ACTIVE TRANSPORTATION FUNCTIONAL PLAN

This project helps fulfill the goals of the Active Transportation Functional Plan, approved by Regional Council in 2006. The plan has resulted in the development of bike lanes and Active Transportation Greenways (off-road multi-use trails) across the municipality. On the peninsula, however, progress in developing such facilities has been slow.

All of the routes described in this report were candidate routes in the 2006 Active Transportation Functional Plan with the exception of part of the North End Local Street Bikeway route.

While this project to identify a north-south bike route was underway, the municipality launched a review of the Active Transportation Functional Plan. Under this review, a more detailed examination of a cycling network for the Halifax peninsula was undertaken which helped assess potential future connections for the north-south routes under consideration.

One other factor related to the Active Transportation Plan Review that influenced this process was consideration of a route type known as a "Local Street Bikeway". Upon review by the HRM Traffic Authority, recommendation of this route type was deemed premature as HRM lacked a policy framework through which to assess it. Therefore, consideration of this option has been delayed until the Active Transportation Plan Review is complete (anticipated in fall 2013). The revised AT Plan will contain a policy framework to guide consideration of "Local Street Bikeways".

HRM REGIONAL PLAN

The Active Transportation Functional Plan aims to achieve outcomes and objectives of the HRM Regional Plan. The Regional Plan aims to increase the number of sustainable transportation commuter trips including those by walking and cycling.

Currently, as part of the review of the Regional Plan (RP+5), there is a particular emphasis on increasing the population of the Regional Centre. This project would support that objective by providing cycling facilities in a land use context advantageous to cycling (i.e. an area which is already compact and mixed-use). Having cycling facilities in place as the population grows increases the probability that some of these new residents will use a bicycle for transportation, and should help reduce the impact of this growth on the road network. Cycling facilities might also be viewed as amenities that will help attract residents to the central part of the municipality.

Current "Snapshot" of Cycling on Peninsular Halifax

The modal share of cycling to work for residents of the peninsula is relatively high compared to other parts of the municipality. According to the 2006 Census, 4.6% of residents in Halifax's north end commuted to work by bike (and 34% walked). Other parts of the peninsula have similarly high proportions for walking and cycling. For most other parts of the municipality less than 1% of residents cycle to work.

Counts of cyclists crossing Quinpool and Cogswell Streets conducted in spring and fall since 2010 have revealed about 1,500 cycling trips across the peninsula during the morning and evening rush hours. There are about 600 cycling trips across the Macdonald Bridge each day.

Cycling facilities on the Halifax peninsula are fragmented and as of 2012 include:

- Bell Road from Robie to Trollope (eastbound side only)
- Bell Road from Trollope to Sackville (both sides)
- Brunswick Street from Sackville to Cogswell
- Lower Water Street from Terminal Road to Sackville Street
- South Park Street from Sackville Street to University Avenue
- Windsor Street from Young Street/Bayers Road to Maxwell Street
- Barrington Greenway (North to Upper Water)
- Halifax Urban Greenway (Beaufort to South)
- Halifax Commons Active Transportation Greenway network
- Vernon Street signed Bike Route
- Macdonald Bridge Bikeway terminus

Considering how a north-south peninsula bike route would connect with these facilities was a key consideration in this planning process.

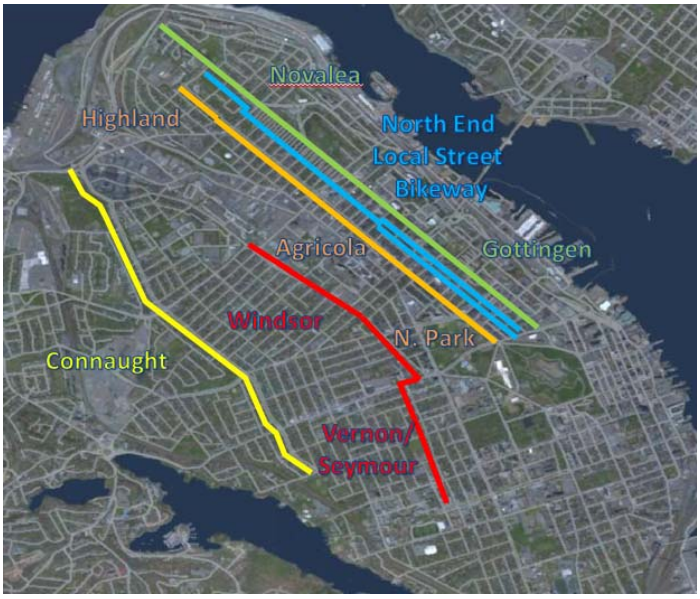
3. Project Components

This section describes the key components of this planning process.

Technical Assessment Of Candidate Routes

Five candidate routes were assessed:

1. Connaught Avenue;
2. Windsor-Vernon-Seymour Streets;
3. Agricola Street (a corridor from Leeds Street to Cogswell Street, also incorporating Highland Avenue and North Park Street);
4. Novalea Drive - Gottingen Street; and,
5. North End Local Street Bikeway using local streets between Agricola and Gottingen Streets from Leeds Street to either Cornwallis Street or Cogswell Street.



Each route was assessed against criteria including:

- Street characteristics such as width and slope;
- Existing traffic conditions such as motor vehicle volume and number of trucks and buses;
- Intersection characteristics such as complexity and ability to accommodate bike lanes;
- Connectivity to origins and destinations and to other cycling facilities;
- Impact to on-street parking; and,
- Public and stakeholder feedback.

The results of each route evaluation are described below in Section 4.

Stakeholder and Public Engagement

The following engagement activities took place:

- Fall 2011: Stakeholder meetings with the North End Business Association, Halifax Cycling Coalition, Ecology Action Centre and Sustainable Transportation Task Force. There was total attendance of about 70 people at these meetings.
- March and April 2012: Two open public engagement sessions. About 180 people attended these sessions.
- August and September 2012: Four public rides of candidate routes. About 55 people went on these rides.
- September 2012: two public workshops to consider the broader network of bike routes on the Halifax peninsula. These meetings had a broader focus, but were considered as part of this planning process. There were about 40 attendees at these sessions.
- January 2013: follow-up meetings with stakeholder groups including the North End Business Association, Halifax Cycling Coalition, Ecology Action Centre, Halifax Community Health Board.

Progress updates were provided regularly to the Active Transportation Advisory Committee and to Community Council.

Review of Current Practices

Many other North American cities are in the process of expanding their bike route networks. New Canadian Bikeway Traffic Control Guidelines have recently been published. Staff and the project consultant reviewed other municipal bike plans, similar projects in other jurisdictions, and various professional technical manuals to inform this process.

Bicycle Facility Types Considered

The following definitions are provided to inform the discussion of route options.

Bicycle Lane: This is a portion of the roadway designated by striping, signage, and pavement markings for preferential use by bicyclists. The standard width of a bike lane is 1.5m, but 1.2m can be used in constrained situations and widths up to 2.0m can improve comfort level. Short-term stopping, primarily for loading and unloading, is permitted in a bike lane but no parking is permitted at any time. There is no physical separation from motor vehicle traffic. Most of the route options included bike lanes.

Local Street Bikeway: A series of quiet local streets designated for priority travel by bicycles. Traffic calming/ diversion measures may be used to reduce the speed and/ or volume of motor vehicles. Directional signage and assistance to bicyclists crossing major streets is also provided. Cyclists share the road with motor vehicle traffic in a comfortable cycling environment suited to a wide range of users. An HRM policy to guide implementation of Local Street Bikeways will be proposed through the Active Transportation Plan review, anticipated for completion in fall 2013.

Shared Lane Markings or "sharrows," are road markings used to indicate a shared lane environment for bicycles and automobiles. Sharrows reinforce the legitimacy of bicycle traffic on the street, provide continuity along a route and recommend proper bicyclist positioning on the roadway. Sharrows are not really a facility type, but they are pavement markings with a variety of uses to support a complete bikeway network.

Active Transportation Greenways: 3 to 4m wide multi-use trails accommodating the broadest range of AT users (e.g. walkers, cyclists, joggers, inline skaters, skateboarders, etc.). This type of facility is accessible to cyclists with a

wide range of abilities. The network of AT Greenways on the Halifax Common is an important crossroads in the peninsula cycling network, though sections require upgrading to the AT Greenway width.

Cycle Track: An exclusive bicycle facility that is physically separated from motor traffic and parking, and distinct from the sidewalk. There are no such facilities in HRM now; they may exceed current typical annual budgets for active transportation; and changes in provincial legislation may be required for their implementation.

On-street Parking Assessments

Parking impact was a route assessment criterion considered for all of the candidate routes. The issue of parking on Agricola between Young and Cunard streets was particularly significant due to strong views in favour of bike lanes on one hand, and serious concerns about loss of commercial parking on the other. Therefore more work was done to better understand the impact of reducing on-street parking in this area.

Functional Design

A functional design of all of the candidate routes was completed by Genivar consulting. These designs assisted staff in determining whether or not the route options were acceptable to the HRM Traffic Authority and helped to determine any impact on motor vehicle "level of service" at intersections where continuous bicycle lanes were considered in place of existing vehicle turn lanes.

A significant amount of effort went into developing a functional design for the *North End Local Street Bikeway* option. This was necessary because this route type is new to HRM and there are no formal national or local guidelines for their implementation in Canada. The functional designs are posted at www.halifax.ca/cycling.

Review by HRM Traffic Authority and other HRM Departments

Traffic and Right-Way Services (Traffic Authority) reviewed the functional designs and have been engaged on the project as it has unfolded. Their role has been to assess each proposed design to ensure the safety and efficiency of the roadway network is maintained for all users.

These functional designs were also reviewed by HRM Fire & Emergency Services. They had no objections to the candidate routes and functional designs.

Municipal Operations was also consulted, in particular due to the implications of traffic calming features on snow clearing operations. While features such as speed humps and curb extensions complicate snow clearing, there are design considerations which could help reduce the impact.

Consideration of other HRM Plans and Processes

At the same time as this project was being undertaken, several other HRM plans and processes were under way:

a) Regional Plan+5 and Centre Plan: These planning processes stress the importance of both Active Transportation and of increased population density on the peninsula, which is proposed for a number of areas. Where candidate routes are well located to serve proposed growth areas, there is an expectation that these bike routes will offer sustainable transportation choices for new residents.
b) North Park Intersection Redesign: the redesign of the North Park Street corridor and proposed roundabouts at intersections of North Park/Agricola/Cunard and North Park/Cogswell/Trollope/Ahern/ Rainnie will take AT connections into consideration.

c) Cogswell Interchange Lands Plan: the scope for this project includes consideration of AT routes on Cogswell. Depending on the outcome of this project, Cogswell may be considered as an east-west bike route and as the southern connection for the North End Local Street Bikeway route option.
d) Open Space Planning: these routes were considered from the perspective of how they could serve as open spaces in and of themselves, and also as connections between major open spaces. Related to this, the Commons play a significant role as a crossroads and destination for peninsula bike routes.

Cost Analysis

Cost estimates were prepared for all of the proposed options, in part to determine if their costs were within typical HRM capital budgets for Active Transportation Plan implementation. The cost estimates are provided in Section 5 and all can be accommodated within typical existing budgets.

Decision-Making

The review and decision-making process for this project is as follows:

1. Submission of this report to the Active Transportation Advisory Committee who make a recommendation to the Transportation Standing Committee;
2. Transportation Standing Committee makes a recommendation to Halifax and West Community Council;
3. Halifax and West Community Council makes a recommendation to Regional Council;
4. The final decision is made by Regional Council.

4. Evaluation of Candidate Routes

The original petition requested the connection of existing bike lanes at the far north end of Windsor Street to existing bike lanes on Bell Road/ South Park, via a route that included Almon, Agricola, North Park, Trollope and Ahern streets. In response, HRM staff recommended the evaluation of four north-south corridors:

1) Connaught Avenue;
2) Windsor-Vernon-Seymour Streets;
3) Agricola Street (a corridor from Leeds Street to Cogswell Street, incorporating Highland Avenue and North Park Street and connecting to the Bell Road/ South Park bike lanes via an AT Greenway on Trollope Street);
4) Novalea Drive - Gottingen Street (extended south via a connection to the Brunswick Street bike lane); and, following stakeholder consultation a fifth option was added,
5) North End Local Street Bikeway (using Leaman Street, Drummond Court, Isleville Street, Bloomfield Street, Northwood Terrace, Fuller Terrace, Creighton Street, and Maynard Street). This was evaluated as an alternative to the Agricola Street route and included the concept of an east-west connection at the south end on either Cornwallis or Cogswell Street which would in turn need to be connected to other existing parts of the bike network like the Brunswick Street bike lanes and the Commons AT Greenways.

Description of Criteria

Connectivity

a. *Origins / Destinations*: the geographical locations where residents live, work, shop, recreate, and access services and public amenities. A consideration here was current and planned population growth as a result of Regional Plan +5. The more origins and destinations that are connected, the higher the ranking.
b. *Proximity to Existing Active Transportation Infrastructure*: these are existing bike lanes, active transportation greenways and signed bike routes. The greater the proximity to current routes, the higher the ranking.
c. *Proximity to Future Active Transportation Infrastructure*: these are routes which have been identified in an HRM planning process for consideration for future implementation. The greater the proximity to planned routes, the higher the ranking.

On-Street Parking

a. *Loss of On-Street Parking*: this refers to the number of on-street parking spots that would be lost to install a bike lane. Less disruption to on-street parking results in a higher ranking.
b. *Demand for Commercial Parking*: If a route has a high usage rate for commercial parking and that parking would have to be removed to install a bike lane, the ranking would be lower.
c. *Demand for Residential Parking*: If a route has a high usage rate for resident parking and that parking would have to be removed to make room for a bike lane, the ranking would be lower.
d. *Availability of Parking Alternatives*: The more options to replace street parking lost in striping a bike lane, the higher the ranking. Parking alternatives include cross-streets, private driveways, and parking lots.

Intersections

a. *Complex Intersections*: Intersections have conflict points and are areas that require particular consideration when planning bike routes. The fewer complex intersections, the higher the ranking.

b. *Intersection Capacity:* Due to width constraints bike lanes may need to be dropped before the intersection to make room for vehicle turn lanes. If vehicle turn lanes can be removed without drastically affecting the motor vehicle level of service, the ranking is higher.

Street Characteristics

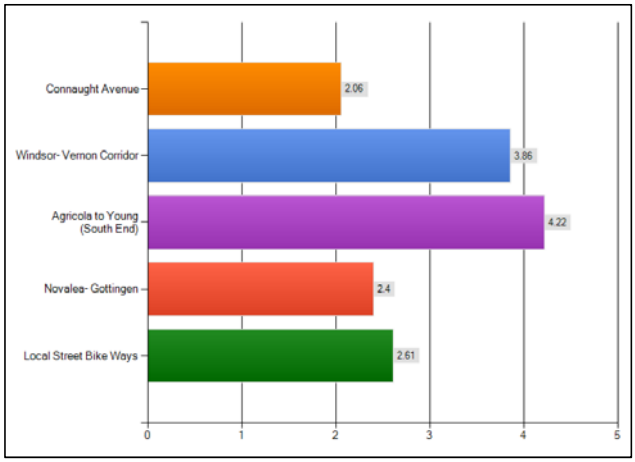
a. *Flat Grades:* Bike routes ideally have grades of less than 6%. The flatter the route, the higher the ranking.
b. *Motor Vehicle Traffic Volumes*: Candidate routes with lower motor vehicle volumes were ranked higher.
c. *Volume of Trucks / Buses*: candidate routes with lower numbers of buses and trucks were rated higher.
d. *Bicycle Volumes:* Candidate routes that already had a higher proportion of bicycle use were ranked higher.

Public and Stakeholder Feedback

The key issues raised by the public and stakeholders were factored into the final evaluation and are reflected in the assessments below. Some key points from the stakeholder and public meetings were:

- Unanimous views that more cycling facilities are required on the peninsula and HRM generally and that HRM should act soon;
- The North End Business Association (NEBA) opposed bicycle lanes on Agricola Street due to the loss of on-street parking that would result and their concerns about the safety of cyclists due to frequent loading activities that take place on the street. NEBA suggested and supported the North End Local Street Bikeway Route and continually expressed their support of increased cycling and walking in the district.
- The Halifax Cycling Coalition and others advocated for the Agricola Street option due to its current popularity for cycling, location, proximity to origins and destinations, and other characteristics.
- A survey at the March/April 2012 public consultation sessions identified Agricola as a preferred route by attendees. Windsor was a strong second. The same survey found support for the Local Street Bikeway option, but only if it consisted of more than simply pavement markings and signage. See figure 4.1 below for route preference. The full survey report is available at www.halifax.ca/cycling.
- There was a consistent request to have the routes accommodate young people, seniors and new cyclists.
- There was a strong desire for the route to be connected into a network, and not be a fragment.

Figure 4.1: Route rankings (on a scale of 1-5) by attendees at public consultation sessions



Note on the Economic Impact of Adding Bike Lanes and Removing On-street Parking

The economic impact of adding bike lanes on Agricola Street and removing on-street parking was a significant issue in this assessment process, however, it was not an assessment criterion. The only way that it could be captured was in the public and stakeholder feedback criteria. The following information and perspectives were submitted and reviewed related to potential economic impact:

- There was almost unanimous agreement among business owners and operators on Agricola between Young and Cunard Streets, that removing on-street parking would be detrimental to their businesses (only two business owners independently expressed no concern). About five businesses stated that they would close if on-street parking was removed. The businesses asserted that access to parking is already a significant impediment to success in the area and that removing parking would hinder the commercial resurgence now underway. They also report increasing financial stress due to rising tax assessments. Finally, although loading would be permitted in a bike lane, they are concerned about the impact of this, in particular on cyclists having to leave the bike lane and merge with motor vehicle traffic to avoid loading vehicles.
- A member of the North End Business Association submitted a study by the Urban Land Institute entitled "Ten Principles for Rebuilding Neighborhood Retail". One of the key findings was the importance of sufficient parking to emerging business districts such as the Agricola Street corridor.
- A number of studies and articles were submitted that illustrated the important role that increased bicycle traffic could have to business districts. These studies did not, generally, address trade-offs between parking removal and the potential for increased bicycle traffic. For a list of studies reviewed, please visit www.halifax.ca/cycling.
- A Dalhousie Masters in Urban Planning student paper that was researched and written in summer/fall of 2012 entitled "The Importance of On-Street Parking to Business Vitality: A Study of Agricola Street, Halifax NS" concluded the following:
  - 44% of businesses anticipate a similar number of customers if parking was removed;
  - Businesses overestimate the percentage of their customers who drive and underestimate those who walk and cycle;
  - 70% of customers walk to Agricola Street when shopping;
  - Customers who arrive by foot or bicycle on average visit more frequently and spend more money than those who drive on a monthly basis;
  - Approximately 30% of on-street parking spaces are being occupied by employees of businesses;
  - Parking occupancy is high but turnover is low.

  This study is posted on www.halifax.ca/cycling.

In summary, the potential economic impact of adding bike lanes and removing on-street parking on Agricola Street was not a factor in route assessment, except as captured in the stakeholder and public feedback criteria.

Ratings

The symbols in rating columns in the route evaluation tables below represent the following:

●	Route is well suited for a bike route according to this criterion
◐	Route is suited for bike route according to this criterion, however there are limitations. Some of these limitations may be addressed with additional measures.
○	Route is less-well suited for a bike route according this criterion. Additional measures are probably required to compensate for limitations if bike route implemented.

CONNAUGHT AVENUE

The Connaught Avenue bike route would be 2.8 km long and would consist of painted bike lanes beginning at Windsor Street and extending south to Jubilee Road. It would require the removal of all on-street parking. It would provide a north-south corridor on the west side of the peninsula and would be close to destinations such as the Halifax Shopping Centre, universities and hospitals. There could also be a future connection to Halifax Urban Greenway.

Criteria	Rating	Notes
Connectivity		
Origins / Destinations	◐	There are a few notable origins and destinations close to the route, but none of them are directly adjacent.
Proximity to existing AT	○	There is no existing AT route that would connect directly to a bike lane on Connaught.
Proximity to future AT	●	If the Halifax Urban Greenway is extended north and if a pedestrian/ bicycle bridge was built over the CN Rail cut behind the Joseph Howe Superstore, these could incorporate connections with a bike facility on Connaught.
On-street Parking		
Loss of on-street parking	○	All of the on-street parking would have to be eliminated.
Demand for commercial parking	●	There is little or no commercial parking demand on Connaught.
Demand for residential parking	◐	Almost all of the abutting land uses are residential and all have private driveways. Parking options for visitors and service providers would be reduced.
Availability of parking alternatives	◐	Private driveways and cross-streets provide alternative parking to that which would be lost if a bike lane was installed.
Intersections		
Complex / busy intersections	○	Because Connaught is four lane arterial, the intersections with major east-west streets tend to have multiple turning and storage lanes.
Street Characteristics		
Flat grades	◐	Connaught has some sections with steeper grades, but overall is within suggested guidelines for bike routes.

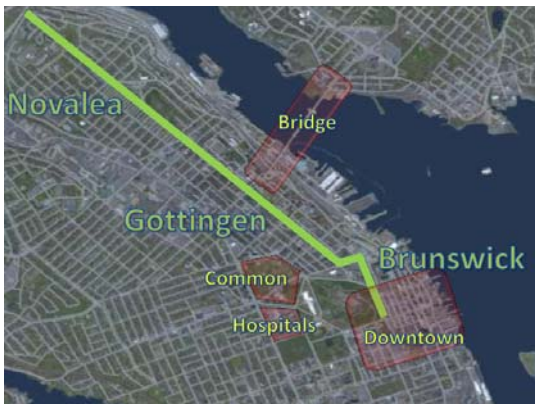
Traffic volumes	○	Connaught is an arterial route with up to 20,822 motor vehicles on weekdays (two way average annual weekday traffic).
Trucks / Buses	◐	Connaught Avenue is a truck route and has low to moderate volumes of buses
Bicycle Volumes	○	Bi-annual peninsula screenline bicycle counts indicate that there is very little bicycle traffic on Connaught.
Public and Stakeholder Feedback		
	○	• This route was ranked last by attendees of public open houses. • Some saw potential for Connaught because of the sufficient width for bike lanes. • Residents expressed concern over loss of on-street parking. • Due to high traffic volumes and intersection complexity, this route does not align with public views that bike routes accommodate young people, seniors and new cyclists.

Connaught Avenue Summary

- Connaught Avenue was removed as a candidate route mid-way through the assessment process.
- Identification of new candidate routes for a north-south bike route on the west side of the peninsula is taking place as part of the Active Transportation Plan Review.

NOVALEA DRIVE AND GOTTINGEN STREET

The Novalea and Gottingen option would be a 3.8 km route consisting of a painted bike lane starting at the very north end of the peninsula, going south on Novalea Drive to Young Street. From there it would continue on Gottingen Street to either Cornwallis or Cogswell Street. The route is connected to Seaview Lookoff Park in the north, several commercial districts, Needham Park and other parks, and schools. With the addition of an east-west bicycle route on Cornwallis or Cogswell, this route would connect with the Brunswick Street bike lane and the Halifax Commons AT Greenways. The route would serve the east side of the peninsula.



Criteria	Rating	Notes
Connectivity		
Origins / Destinations	●	The route is adjacent to higher density residential areas, major employment destinations, parks, a library, schools, NSCC, and recreation centres. It's also near two areas proposed for increased density under the Centre Plan.
Proximity to existing AT	●	The route is close to the Macdonald Bridge bikeway and there are good options for a connection the Brunswick Street bike lane.
Proximity to future AT	●	If the Bridge Bikeway extended to Gottingen, this route would provide a direct connection. Connections to the Commons and downtown could happen via potential bike facilities on Cornwallis or Cogswell streets.
On-street Parking		
Loss of on-street parking	○	On Novalea, half of the on-street parking could remain, but all on-street parking on Gottingen would need to be removed.
Demand for commercial parking	◐	On Novalea demand is modest, so the reduction would have minimal impact. On Gottingen Street the impact would be greater.
Demand for residential parking	●	Most residents have access to off-street parking.
Availability of parking alternatives	◐	Private driveways and the large number of side streets provide parking alternatives.
Intersections		
Complex / busy intersections	○	The intersection of Gottingen and North has a large volume of vehicles and buses. Significant changes (i.e. moving curbs, changing alignments) would probably be required to accommodate continuous bike lanes. The intersection of Young Street also has a high volume of motor vehicles and buses.
Street Characteristics		
Flat grades	●	This corridor has a relatively flat grade, very favourable for cycling.
Traffic volumes	○	Because of the proximately of the Macdonald Bridge, downtown and major employers (e.g. DND) there are high traffic volumes particularly on Gottingen Street. Gottingen is a collector route with up to 13,444 motor vehicles on weekdays (two way average annual weekday traffic).
Trucks / Buses	○	Gottingen Street carries 330 buses on 15 bus routes every day, among the most for any street in the municipality. Part of Gottingen is under review for a transit express route. It is also a truck route.
Bicycle Volumes	◐	Observations of the route indicate that there is regular bike traffic.

Public and Stakeholder Feedback		
	○	• Attendees at public meetings ranked this route second last among the five options. • No stakeholder advocated for this route. • Due to intersection complexity and the high bus/ motor vehicle volumes, this route does not align with public views that bike routes accommodate young people, seniors and new cyclists.

Novalea Drive and Gottingen Street Summary

- Novalea Drive and Gottingen Street were removed as a candidate route mid-way through the assessment process. Two other options for a north-south bike route on the east-side of the peninsula were also assessed.

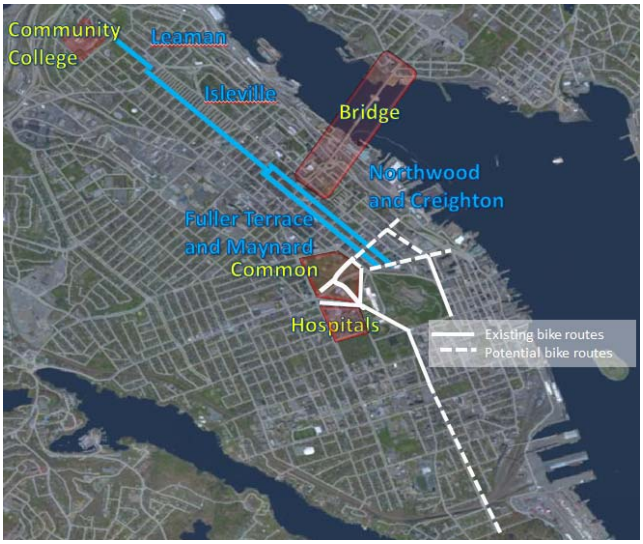
NORTH END LOCAL STREET BIKEWAY

(via Leaman, Drummond, Isleville, Bloomfield, Northwood, Creighton, Fuller and Maynard.)

This would be a 3.3. km route starting at Leeds St. in the north and connecting to other routes at its south end at either Cornwallis or Cogswell Street.

Local street bikeways are low speed, low volume streets that have been prioritized for bicycle through traffic. They typically include a mix of traffic calming and bicycle priority measures to minimize traffic volume and speed to create a comfortable cycling environment suited to a wide range of users.

Although the concept is new to HRM, it is well used in other places. Before it can be recommended, HRM needs to have a policy for implementing this type of route.



Criteria	Rating	Notes
Connectivity		
Origins / Destinations	●	Good connections to the NSCC and Seaview Look-off Park in the north. En route there are other parks, a school and the Hydrostone shops. The route would be one block from shops on Agricola and Gottingen. Dense residential areas abut the route (e.g. Hydrostone) and a number of multi-unit buildings are planned right on the route.

Proximity to existing AT	◐	The route is within a block of the Macdonald Bridge and Commons with connections to the Bell Road bike lane. At the south, this route is about three blocks from the Brunswick Street bike lane.
Proximity to future AT	●	The route would cross potential east-west bike routes on Almon, Charles and either Cornwallis or Cogswell. Connections at the south end of the route would be key to its success.
On-street Parking		
Loss of on-street parking	●	No on-street parking would have to be eliminated.
Demand for commercial parking	●	This route would not impact existing commercial parking.
Demand for residential parking	●	This route would not impact existing residential parking.
Availability of parking alternatives	●	There is no need for parking alternatives.
Intersections		
Complex / busy intersections	◐	There are no signalized crossings of major streets such as North and Young. Treatments such as curb extensions and refuge medians would be added where possible to facilitate bicycle crossings. Figure 4.2 is a concept illustrating a refuge median at the intersection of Isleville, Young and Kaye streets.
Street Characteristics		
Flat grades	●	Gentle slope from north to south, well suited for cycling.
Traffic volumes	●	All streets have low traffic volumes and while speeds are under local limits, they exceed suggested speeds for local street bikeways. Traffic calming would be proposed along this route. Figure 4.3 illustrates the use of speed humps to facilitate motor vehicle speeds at 30km/h.
Trucks / Buses	●	This is not a truck route and there are no buses.
Bicycle Volumes	●	There have been no bicycle counts on this corridor, but casual observation suggests regular bike traffic.
Public and Stakeholder Feedback		
	◐	• This route ranked third at public meetings in March and April 2012 • On public rides people generally supported this route but had concerns about major street crossings and personal safety (due to it being off major streets). • Prior to installation of any traffic calming features, engagement with abutting property owners is required. • For the most part, this route would do well to accommodate young people, seniors and new cyclists but only with improvements to make major street crossings easier.

		• The public said access to shops and services was a priority too: there is direct access to the Hydrostone and the route is within two blocks of Agricola and Gottingen streets.

Figure 4.2: Concept for crossing Young and Kaye Streets on Isleville using median refuges.

Figure 4.3: Concept for use of speed humps for traffic calming on local street bikeway.

North End Local Street Bikeway Summary

- The route evaluation found that this route type and location could serve as a viable bike route that would be attractive to a wide range of cyclists, including young people, seniors and new cyclists.
- This route was retained for functional design, but is not presented as an option for implementation because the Traffic Authority does not have policy direction from Council on the use of traffic calming and diversion measures, other than through the Neighbourhood Shortcutting Policy, which does not apply in this case.
- While this facility type cannot be recommended at this time, it is being considered as part of the Active Transportation Plan Review process. The AT Plan review is anticipated to be before Council in fall of 2013.

AGRICOLA STREET

This route would begin at Leeds Street in the north and travel south on Highland Avenue and then on to Agricola Street as a signed bike route (low traffic volumes - no bike lane required). Painted bike lanes would begin at Young Street where traffic volumes become typical of collector roads. South of Cunard, bike lanes could be added as part of the North Park Street intersection redesign (if roundabouts are the favoured alternative, three travel lanes in each direction will not be required and space should be available). The route would connect to the Bell Road bike lanes via the existing Trollope Street AT Greenway. If bicycle facilities could be extended as far as Point Pleasant Drive, the total corridor length would be 6km.

Due to the many competing demands for road space, the critical area in this route for planning purposes is the 1.4 km section between Young and Cunard Streets.

Criteria	Rating	Notes
Connectivity		
Origins / Destinations	●	At the northern end is the NSCC, traveling south, there are schools, commercial districts, higher density residential, employers, and parks.
Proximity to existing AT	●	The closest existing connection is the North Common AT network and the connections these provide to the Bell Road bike lane.
Proximity to future AT	●	There is potential for bike lanes on North Park Street and an upgraded Commons AT network. There are three other potential east- west connection opportunities.
On-street Parking		
Loss of on-street parking	○	From Young to North, all on-street parking (96 spaces) would have to be removed. From North to Cunard, half of the on-street parking would need to be removed (west side only, 44 spaces).
Demand for commercial parking and other requirements.	○	Some sections see very high demand: on-street, short-term parking on Agricola has an average daytime usage rate over 50% and 100% is observed at times near North Street. Agricola is also used for loading (permitted in bike lanes, and within limits, tolerated by cyclists). Too much loading may undermine the utility of the bike lane, and necessitate consideration of alternate loading arrangements.
Demand for residential parking	◐	Between Young and Cunard there is a mix of commercial and residential. Some residences do not have off-street parking, particularly near Cunard Street.

Availability of parking alternatives	○	The only alternative thoroughly researched was the potential to replace lost short-term commercial parking on Agricola with new short term spots on side streets. Between Young and Cunard, the side streets have many unrestricted parking spaces (i.e. no time limits) and enough of these could be converted to short term parking to replace all the short-term spaces lost on Agricola. These spaces are currently used by commuters (i.e. they are nearly 100% occupied with little daytime turnover). The loss of commuter parking may have impacts elsewhere. The North End Business Association was not satisfied with this alternative.
Intersections		
Complex / busy intersections	◐	While intersections at Young, Almon and North streets can be busy, they are not very complex and all are signalized. There would be some loss in motor vehicle capacity if bike lanes went right up to the intersection (desirable for a continuous bicycle facility). Intersections are under review at the Cunard and Cogswell ends of North Park Street, which could be redesigned to accommodate bicycle traffic.
Street Characteristics		
Flat grades	●	Agricola slopes gently, but is suitable for cycling.
Traffic volumes	◐	Agricola is a collector route with up to 11,096 motor vehicles on weekdays (two way average annual weekday traffic) between Young and Cunard.
Trucks / Buses	◐	Agricola is a designated truck route. There are no bus routes.
Bicycle Volumes	●	The peninsula bicycle screenline count registers North Park (and by extension, Agricola) as the second busiest crossing.

Public and Stakeholder Feedback		
	○●	• The North End Business Association (NEBA) opposes the reduction of on-street parking required for a bike lane. Some members contend they will have to close if this happens. They also express concerns about the safety of cyclists who would have to move into the vehicle lane to pass loading activities. NEBA supports the development of a Local Street Bikeway. • The Halifax Cycling Coalition supports bike lanes on Agricola due to advantages such as slope, proximity to key origins and destinations and because it is already a popular bike route. • Other Stakeholders like the Ecology Action Centre and the Halifax Community Health Board have expressed support for bike lanes on Agricola. • Attendees of public engagement sessions favoured Agricola over other options. • Agricola would be mixed related to its ability to accommodate young people, seniors and new cyclists: one factor would be whether or not the bike lanes extend to the intersections; another is the how often cyclists would have to exit the bike lane when it is blocked by loading vehicles.

Agricola Street Summary

This route was retained as an option for functional design and is presented as an option for implementation.

WINDSOR - VERNON - SEYMOUR

This 2.8 km route would provide a connected spine through the centre of the peninsula. The route incorporates several facility types. From Young Street to the former St. Patrick's High site (near Welsford Street) it would be a painted bike lane that continues the existing bike lanes north of Young Street.

A formal connection from Windsor to Quingate Place and Vernon would be built on the edge of the former High School property.

Vernon and Seymour Streets would continue to be signed bike routes and would be candidates for upgrading to a Local Street Bikeway once a policy was in place to guide the development of this type of facility in HRM.

Criteria	Rating	Notes
Connectivity		
Origins / Destinations	●	In the north the Forum is both a destination and an area under consideration for increased density in the Centre Plan. There is high density residential on side streets off Windsor. The route passes near hospitals, Quinpool Road shops (also proposed for increased density), and ends at Dalhousie. Dal and the hospitals are part of a group (the Institutional District) who strongly support HRM's development of cycling facilities serving the district
Proximity to existing AT	●	Windsor already has a bike lane north of Young. The corridor would be close to the Commons AT network. Vernon Street is currently a signed bike route.
Proximity to future AT	●	This route crosses many potential east-west bike routes under consideration in the AT Plan review: Almon, Allan, Charles, Welsford and University Avenue.
On-street Parking		
Loss of on-street parking	○	All on-street parking would have to be removed between Welsford and Young Streets (76 spaces), though occupancy of on-street parking was not observed to be high.
Demand for commercial parking	◐	Most larger commercial operations on Windsor have parking off-street. About six businesses between Duncan and Lawrence Streets would lose eight existing short-term on-street spaces in front of their businesses.
Demand for residential parking	●	It appears that all residential properties on Windsor have off-street parking, but visitor and service provider parking may be affected.
Availability of parking alternatives	●	There are 14 side streets between Young and Welsford with on-street parking available, so visitor/ service provider parking would only be a short walk away. For the small businesses south of Cunard, there are opportunities for HRM to add short term parking to offset the loss of the eight spots on Windsor serving them now.
Intersections		
Complex / busy intersections	○	While intersections at Young, Almon, and North streets can be busy, they are not very complex and all are signalized. There would be some loss in motor vehicle capacity if bike lanes went right up to those intersections (desirable for a continuous bicycle facility). The intersection at Chebucto/Cunard is both busy and complex and bike lanes are likely to be discontinuous through it or a dramatic loss in motor vehicle level of service would result. Quinpool and Quingate/Vernon is also busy, but would be enhanced with improved guidance for cyclists. Vernon/Seymour and Coburg, where cyclists must navigate a tricky jog, would also need improvement.
Street Characteristics		

Flat grades	●	Windsor slopes gently, but is suitable for cycling.
Traffic volumes	◐	Windsor is a collector route with up to 11,475 motor vehicles on weekdays (two way average annual weekday traffic).
Trucks / Buses	◐	Windsor is a truck route and has 3 bus routes with 73 buses a day.
Bicycle Volumes	●	The peninsula screenline bike count consistently ranks this corridor as having the highest number of cyclists during peak hours.
Public and Stakeholder Feedback		
	●	• This route was ranked 2nd by attendees at public meetings. • Out of all the abutters notified (by their councillor) that the route was under consideration for bike lanes/ parking removal, only three (between Duncan and Lawrence) raised objections. • This route has pros and cons for accommodating young people, seniors and new cyclists: the southern end on Vernon/ Seymour is more suited to this group, but they would be deterred by the challenges of merging with traffic as long as the bike lane remains discontinuous at the busy intersection with Chebucto/Cunard Streets. This could be mitigated when and if the intersection is redeveloped (however this is not imminent). • Cyclists repeatedly said that they wanted routes on main streets with direct access to common destinations, which this route delivers.

Windsor – Vernon – Seymour Summary

This route was retained as an option for functional design and is presented as an option for implementation in this report.

SUMMARY OF RATINGS OF ALL CANDIDATE ROUTES

Candidate Routes Criteria	Connaught	Novalea Gottingen	Local Street Bikeway	Agricola	Windsor Vernon Seymour
Connectivity					
Origins / Destinations	◐	●	●	●	●
Proximity to existing AT	○	●	◐	●	●
Proximity to future AT	●	●	●	●	●
On-street Parking					
Loss of on-street parking	○	○	●	○	○
Demand for commercial parking	●	◐	●	○	◐
Demand for residential parking	◐	●	●	◐	●
Availability of parking alternatives	◐	◐	●	○	●
Intersections					
Complex / busy intersections	○	○	◐	◐	○
Street Characteristics					
Flat grades	◐	●	●	●	●
Traffic volumes	○	○	●	◐	◐
Trucks / Buses	◐	○	●	◐	◐
Bicycle Volumes	○	◐	●	●	●
Public and Stakeholder Feedback					
	○	○	◐	●○	●

5. Detailed Description of Options and Recommendations

Upon completion of the evaluation process for the five candidate routes, and functional design of three candidate routes, the following two options were retained for consideration for implementation:

1) Windsor- Vernon -Seymour (recommended for implementation); and
2) Agricola Street (not recommended for implementation at this time).

These two options are described in more detail in this section.

1) Windsor - Vernon - Seymour

This 2.8 km route would provide a connected spine through the centre of the peninsula. The route incorporates several facility types:

- From Young Street to the former St. Patrick's High site (near Welsford Street) it would be a painted bike lane that continues the existing bike lanes north of Young Street.
- A formal connection from Windsor to Quingate Place and Vernon would be built on the edge of the former High School property.
- Vernon and Seymour Streets would continue to be signed bike routes and would be candidates for upgrading to a Local Street Bikeway once a policy was in place to guide the development of this type of facility in HRM.

Figure 5.1- Concept of Bike Lane Looking South on Windsor Street From Compton Street

PHYSICAL DESCRIPTION

Windsor Street (between Young Street and former St. Patrick's High School)

This would be a painted bike lane varying in width from 1.2 to 1.8 meters from Young Street in the north to the connection to Quingate Place behind the former St. Patrick's High School in the south. All 76 on-street parking spaces and one taxi stand by the Forum would be removed. There is an existing accessible parking spot serving the church near Cunard & Windsor which would be maintained because the bike lane would be interrupted at this point. There would be two options for the intersections at Almon and North Streets (figures 5.2 and 5.3):

Option A: Maintain bike lanes through the intersections. This would require that all Windsor Street approaches be reduced from two lanes to one lane, which would impact the motor vehicle level of service at these intersections. Intersection performance analysis indicates that the removal of turn lanes would result in slightly increased delays, volume/capacity ratios and queue lengths for Windsor Street motor vehicle traffic. Such changes can potentially result in infiltration of commuter traffic onto local streets as motorists search for quicker routes to their destination. However, the intersections would still function within HRM recommended acceptable limits. The primary benefit would be that the bike lanes would extend up to the intersections, providing designated space for cyclists in the areas which have the most potential conflicts (i.e. intersections).

Figure 5.2 Bike Lanes maintained at intersections (Option A)

Option B: Discontinue bike lanes at the Almon and North Street intersections: This option would include the use of a shared use lane designated with sharrows to maintain some route continuity and visibility.

Figure 5.3 Bike Lanes discontinued at intersection approaches with shared lane (Option B)

The intersection at Cunard/Chebucto would see the discontinuation of the bike lanes for about 50-75m before and after the intersection and the use of sharrows and signage to maintain bike route continuity (Figure 5.4). Intersection performance analysis indicates that removal of turn lanes would result in significantly increased delays, volume/capacity ratios and queue lengths for Windsor Street motor vehicle traffic.

Figure 5.4 -Shared lane treatments at Windsor, Chebucto/Cunard Intersection.

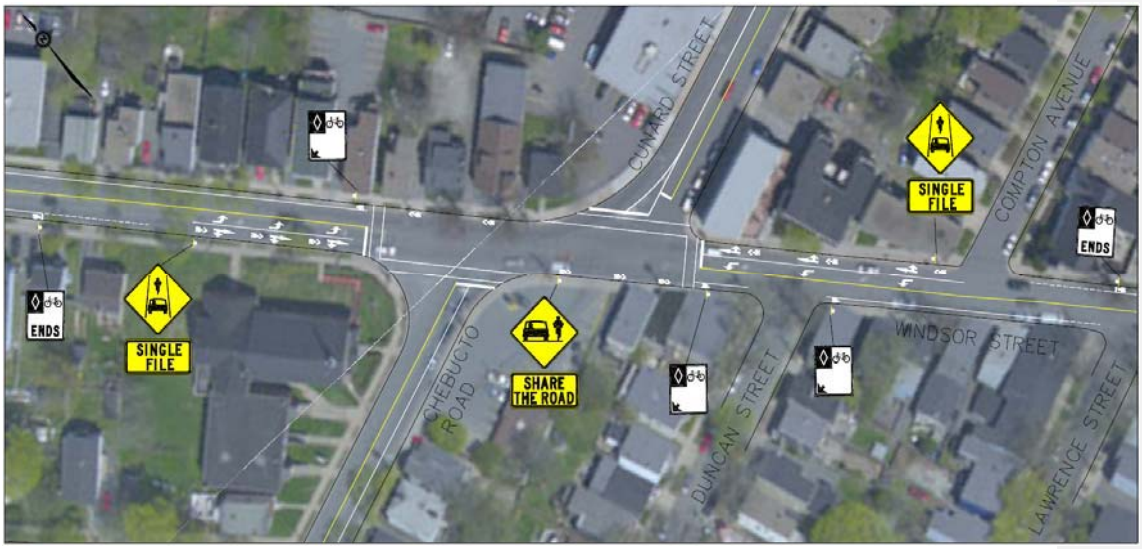


Figure 5.5 Off-road Connection from Windsor to Quingate

Windsor-Vernon Connection

At the edge of the former St. Patrick's High School, an off-road AT Greenway or cycle-track would make the connection between Windsor Street and Quingate Place. On Quingate Place the off-road facility could be continued up to the intersection with Quinpool Road, and/ or a curb cut provided allowing cyclists to rejoin the roadway. Detailed design will follow the planning process for the future use of this property. It is understood that the property will be declared surplus in June 2013 by the Halifax Regional School Board.

Vernon and Seymour Streets

These streets would be proposed for conversion to a Local Street Bikeway following the adoption by Council of a policy to allow the consideration of such facility types. They already function reasonably well as bike routes due to their relatively low motor vehicle volumes and good proximity to origins and destinations. They would benefit from some type of intervention to improve cyclist

crossings of Coburg Road, and possibly some traffic calming if speeds are found to exceed those recommended for Local Street Bikeways.

Cost

The cost of painting bike lanes on Windsor including changes to signage and lane adjustments is approximately $20,000. The cost of a connection between Windsor and Vernon streets depends on the final design, however it's expected to be in the range of $100,000.

Other elements:

The following would also be implemented in association with this bike route:

- Conversion of some unrestricted parking (no time limit) to short term parking on Duncan, Lawrence, Allan and Compton Streets near the corner of Windsor Street. The exact number is to be determined, in consultation with affected shop owners. Residents would be eligible for residential parking exemptions.
- Wayfinding signage to guide cyclists when the facility type changes or the route jogs. This would also provide a clear identity to the route.
- Branding and consideration of adding minor streetscaping elements to support the route and to enhance the street for all users;
- Public education and marketing to inform users about the new pavement markings on the street, advertise commercial parking on side streets, and promote the route for cycling.
- Consider development of a Local Street Bikeway on Vernon and Seymour Streets if and when this route type is enabled.
- Ongoing monitoring to assess the impact of the new route.

Implementation

If approved, the Windsor Street bike lane could be installed immediately.

Detailed design of the connection between Windsor and Vernon Streets could begin as soon as the former high school was declared surplus. The bicycle facility only requires a narrow strip at the northern edge of the property which should not significantly affect the site's redevelopment potential.

Planning for the Local Street Bikeway on Vernon and Seymour Streets could only begin if and when an enabling policy is approved through the Active Transportation Plan Review. The earliest that this could happen is fall 2013.

Evaluation Summary

From a **connectivity** perspective, its position in the middle of the peninsula, adjacent to a wide range of current and potential future origins and destinations, as well connecting a bike lane at one end to a popular local street route in the south (Vernon) are all positive. Future connection to six potential east-west routes is also possible.

Related to the **on-street parking** impact, 76 spaces would be removed. However, these spaces generally have low occupancy and a variety of other parking options are available (private lots, driveways, and side streets). One (Sunday Only) accessible parking spot near Chebucto could be retained.

Intersection complexity is perhaps the biggest challenge for this route. Bringing the bike lanes up to the intersections of Young, Almon, and North, as proposed in the recommended option, mitigates this significantly. In the short-term, shared lane treatments at the Windsor - Chebucto/Cunard intersection would provide enhanced visibility and guidance to cyclists, but limit the attractiveness of the route to cyclists who prefer more separation

from motor vehicles. The fact that this intersection has been identified for improvements may be an opportunity for upgrading the intersection with more separation for cyclists in the future.

While some **street characteristics** present limitations for this route, they are manageable. On the positive side, both the slope of the entire route and the popularity of the route for bicycling are very favourable. The fact that it is a collector street means that it tends to have somewhat higher traffic volumes and bus traffic on the route is a consideration as buses will block the bike lane to pick up and let off passengers from time-to-time. These last points are typical of other bicycle lanes in HRM.

Public and stakeholder feedback on this route was almost universally positive. The only objections were from three business owners in the Duncan to Lawrence block and the parking alternatives on side streets would be 10m to 50m away from their front doors. The route was ranked second by attendees at public engagement sessions. The route is not ideal for younger, older and new cyclists, due in particular, to the interruption of the bike lanes at Windsor - Cunard/Chebucto and the lack of physical separation from motor vehicle traffic on a collector road.

RECOMMENDATIONS

1. Identification of the full 2.8 km corridor from Young Street to University Avenue as central north-south bike route on the peninsula.
2. Approval of installation of a painted bike lane on Windsor Street from Young Street to just south of Welsford Street, near the former St. Patrick's High School as per the above description and functional design for this project.
3. Approval of Option A, with bike lanes extending up to the intersections at Almon and North Streets.

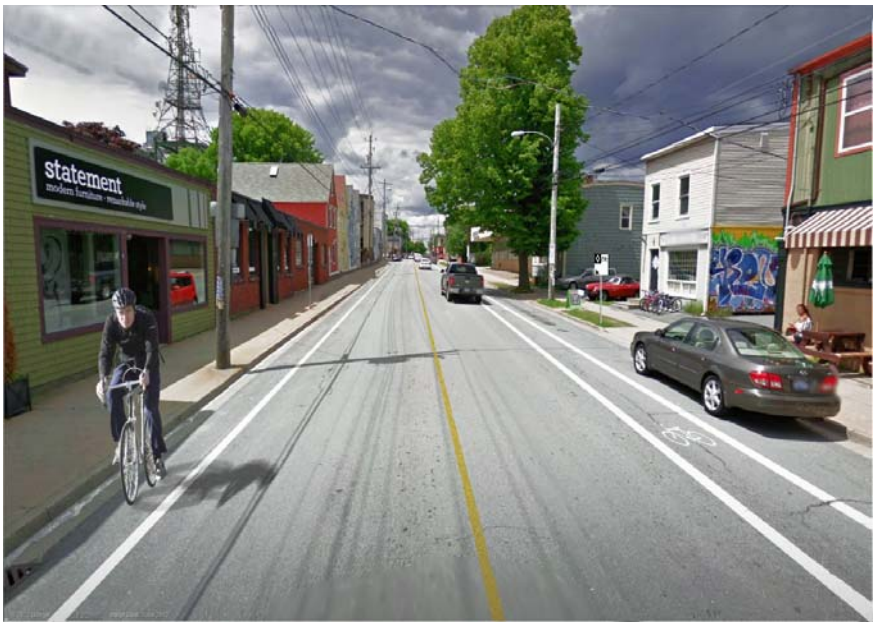
2) Agricola Street

(Highland Avenue, Agricola Street, and North Park Street)

This route would begin at Leeds Street as a signed bike route (low traffic volumes - no bike lane required) and travel south on Highland Avenue and then on to Agricola Street. Painted bike lanes would begin at Young Street where traffic volumes become typical of collector roads. South of Cunard, bike lanes could be added as part of the North Park Street intersection redesign (if roundabouts are the favoured alternative, three travel lanes in each direction will not be required and space should be available). The route would connect to the Bell Road bike lanes via the existing Trollope Street AT Greenway. If bicycle facilities could be extended as far as Point Pleasant Drive, the total corridor length would be 6km.

Due to the many competing demands for road space, the critical area along this route for planning purposes is the 1.4 km section between Young and Cunard Streets.

Figure 5.6 - Concept of Bike Lane Looking North on Agricola Street from Charles Street



Physical Description

Agricola Street (Leeds to Young Street)

This part of the route starts at Leeds Street and follows Highland Avenue, until the name changes to Agricola Street at Hillside. From there to Young Street, Agricola is a divided roadway with a generous treed median. The fronting land uses are almost entirely residential and so are the traffic volumes. Initially this section would be a signed bike route only, providing route continuity to a key destination, the Nova Scotia Community College. It may be considered for future conversion to a Local Street Bikeway.

Agricola Street (Young to North Street)

From Young to North Street the route would have 1.8m painted bike lanes in each direction with no on-street parking on either side (Figure 5.8): 96 on-street parking spaces on Agricola would need to be removed. While there is low utilization of spaces north of Almon, there is high utilization of on-street parking between Almon and North.

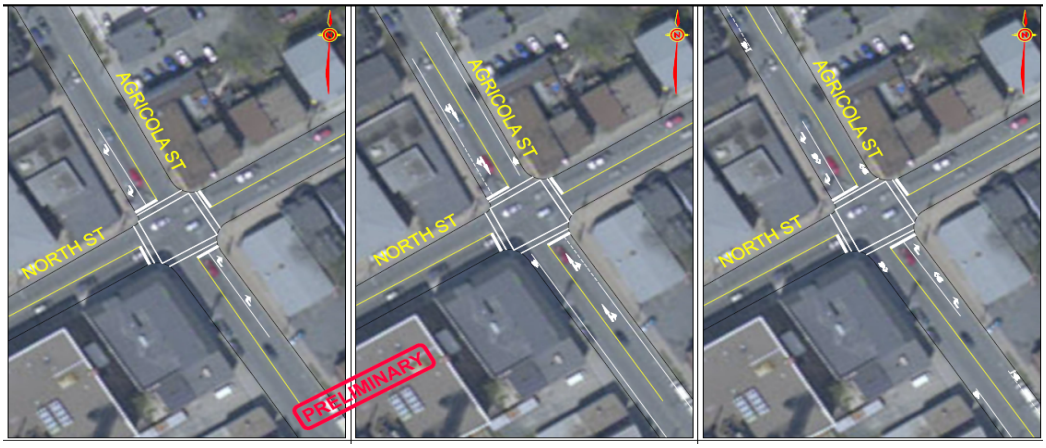
There are two options for intersection treatments at Young, Almon and North Streets (Figure 5.7):

Option A: Maintain bike lanes through the intersections. This would require that all Agricola Street approaches be reduced from two lanes to one lane, which would impact the motor vehicle level of service at these intersections. Intersection performance analysis indicates that the removal of turn lanes would result in slightly increased delays, volume/capacity ratios and queue lengths for Agricola Street motor vehicle traffic. Such changes can potentially result in infiltration of commuter traffic onto local streets as motorists search for quicker routes to their destination. For each location the "overall intersection" would still function within HRM recommended acceptable limits. However, for two specific movements at those intersections, level of service is expected to fall below HRM acceptable limits.

When bike lanes are discontinuous at intersections, cyclists must merge with motor vehicle traffic, a situation which many new cyclists find uncomfortable. To increase the mode share of cycling, the comfort level of new cyclists should be considered. Designated space (i.e. a bike lane) is probably most helpful in the areas which have the most potential conflicts (i.e. intersections).

Option B: Bike lanes would discontinue at the approaches to intersections ~~(figure #).~~ Sharrows would be used to maintain route visibility and suggest where straight-through cyclists should position themselves. No motor vehicle lanes would be removed at the intersection approaches and there would be no reduction in level of service.

Figure 5.7 Intersection Options at Agricola and North



Current Configuration | Option A: Continuous Bike Lanes | Option B: Shared Lanes At Intersection

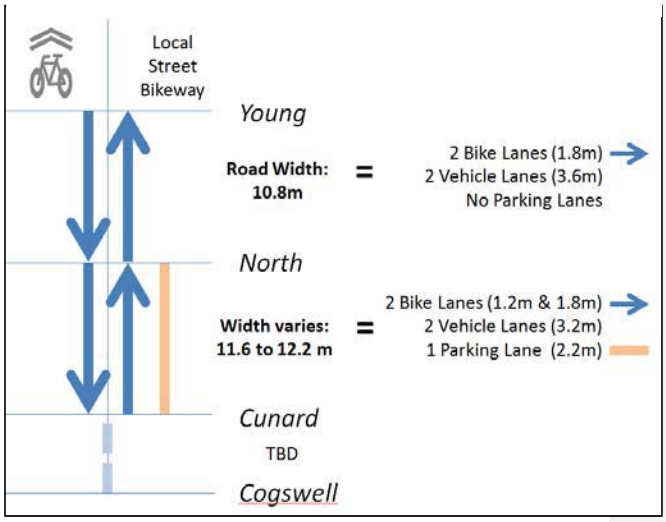
Unrestricted parking on all the side streets (i.e. with no time limit) would be converted to short-term parking in amounts related to observed occupancy rates of short term parking lost on Agricola Street. Changing unrestricted parking on side streets to time-limited commercial parking would displace commuter parking. It may also impact residential parking, however residents would have access to residential parking exemptions.

Loading and unloading could continue from the bike lane unless "no-stopping" signs are posted as well. While vehicles are loading/ unloading, cyclists would have to leave the bike lane and merge with motor vehicle traffic. Avoiding an occasional loading vehicle is viewed as an improvement by the cycling community over the current situation where cyclists must avoid continually parked vehicles, but the North End Business Association has expressed concern for the safety of cyclists who will have to leave the cycle lane to avoid loading vehicles.

Agricola Street (North to Cunard)

Between North and Cunard, Agricola Street is wider than between Young and North, so parking could remain on one side while accommodating bicycle lanes on both sides. Southbound, on the west side, 44 parking spaces would be removed and there would be a 1.2m bike lane. This is the downhill direction where faster cyclists are more at risk of 'dooring' type collisions (conflicts with driver side door opening into bicycle lane). North-bound, on the east side, on-street parking could be *maintained* and there would be a 1.8m bike lane (this is the uphill side where slower moving cyclists have more time to react to opening car doors, and it is a slightly wider bike lane providing more maneuvering room to avoid such collisions). Some or all of the unrestricted parking (i.e. with no time limits) on the side streets could be converted to short term spaces in order to make up for the loss of commercial parking on Agricola.

Figure 5.8: Summary Of Bike Lane Parking Impact Young To Cunard



There would be similar considerations in this section with regard to converting side street unrestricted parking to short term parking, and regard loading/ unloading in the bike lane.

North Park Street (Cunard to Cogswell)

South of Cunard, where Agricola becomes North Park Street, bike facilities could be added as part of the "North Park Street Intersection Redesign" process if roundabouts replace the signals at Cunard and Cogswell. With roundabouts, the three travel lanes currently serving each direction will almost certainly be unnecessary and space would then be available for bicycle lanes on both sides and/ or an AT Greenway or Cycle Track on one side. From Cogswell, the route would connect via an existing AT Greenway on Trollope Street, to existing bicycle lanes on Bell Road and South Park Streets.

COST

The cost of painting bike lanes on Agricola Street, including associated changes to signage and lane adjustments would be approximately $20,000.

OTHER ELEMENTS:

The following would also be implemented in association with this bike route:

- Addition of short term parking on side streets between Young and Cunard Streets;
- Wayfinding signage to guide cyclists and to provide a clear identity to the route;
- Consideration of minor streetscaping elements to support the route and enhance the street for all users; and,
- Public education and marketing to inform users about new pavement markings on the street, advertise commercial parking on side streets, and promote the route for cycling.

IMPLEMENTATION

The painted bike lane from Young to Cunard could be installed soon after approval. At the same time, there would be changes to parking controls on both Agricola and side streets in order to maximize the number of short-term commercial parking spots and so mitigate the impact on commercial operations. Way finding signage would also be added.

The North Park Street section would be completed as part of the North Park Intersections Redesign process, currently anticipated for implementation in 2014.

The section north of Young Street would be considered for a Local Street Bikeway route type following the completion of the Active Transportation Plan Review, expected in fall 2013.

EVALUATION SUMMARY

From a **connectivity** perspective, its position on the east side of the peninsula, adjacent to a wide range of current and potential future origins and destinations is very positive. It has direct connections to the Bell Road bike lane and the Commons AT Greenway network. There are possible connections to at least four potential east-west bike routes currently under consideration.

The **on-street parking** impact is significant, with the removal of 140 spaces, about 100 of which appear to be very well used. In much of this area, on-street parking is in demand by residents, employees, commuters and customers. The option to replace commercial parking removed from Agricola Street by converting unrestricted parking on side streets to short-term parking, could provide a comparable number of spaces for customers, but would displace commuter and employee parking, and add pressure to residential parking. This solution was also considered inadequate by the North End Business Association.

Intersection complexity: The most complex intersections along this route (Agricola/North Park & Cunard and North Park & Cogswell/Rainnie/Ahern/Trollope) are anticipated to be redesigned in the near future, with a configuration much improved for cyclists. The intersections of Agricola with Young, Almon and North are not particularly complex, and with bike lanes maintained right up to the intersections, more space and visibility would be provided for cyclists.

While some **street characteristics** present limitations for this route, they are manageable. On the positive side are both the slope of the entire route and the fact that it is already very popular with existing cyclists. The fact that it is a collector street means that it may have higher traffic volumes, but the fact that are no transit routes is an advantage. While the street is a truck route and is used regularly by emergency vehicles, these do not detract

from the viability of the route. Providing a designated space for cyclists would make it more comfortable for all road users.

Public and stakeholder feedback on this route was divided. The Halifax Cycling Coalition and others have been advocating very strongly for the advantages of this route. This route was also well supported by attendees at public engagement sessions and it was the preferred route of attendees at the Peninsula Cycling Network Workshops in September 2012. The route was also well received by those who attended public rides.

The North End Business Association, which represents business owners and operators in the area all along the commercial section of Agricola Street between Young and Cunard is opposed to the installation of a bike lane on Agricola Street. This is primarily because of the impact to their business viability if on-street parking was removed. Over 40 businesses attended stakeholder meetings and attendees were consistently opposed to the removal of parking. They favoured the development of a bike route using local streets between Agricola and Novalea/Gottingen and were supportive of measures generally to improve conditions for cycling and walking on the peninsula.

RECOMMENDATIONS

There are two recommendations for the Agricola Street route:

1) Do not proceed to implement bike lane on Agricola Street between Young Street and Cunard Street at this time. Given the strong opposition of the North End Business Association and the fact that an alternative nearby route (the North End Local Street Bikeway) may be a possibility, it would seem prudent to wait and see if the alternative route could be developed.
2) Reconsider the Agricola Street route if the Local Street Bikeway option cannot be pursued (i.e. if enabling policy is not approved) or is implemented and found to be ineffective. Any reconsideration of the Agricola Street option would have to incorporate an area parking management component.

6. CONCLUSION

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The objectives of this project were to:

1. Identify, plan and implement at least one north-south cycling route that connects with the peninsula cycling network;
2. Implement routes that attract more residents to cycling;
3. Support other municipal objectives (e.g. Regional Plan, Centre Plan, Open Space Planning, Stepping up Physical Activity Strategy.)

The project's success in meeting these objectives can be summarized as follows:

1) Three routes were subject to full functional design and one route, Windsor-Vernon-Seymour is recommended for implementation. The North End Local Street Bikeway route would be a candidate for implementation if and when enabling policy is developed.
2) At this point it is unclear if the recommended route will attract more residents to cycling. The routes that tend to attract more residents to cycling tend to be separated facilities (e.g. cycle tracks or AT Greenways) or Local Street Bikeway routes. On the Windsor-Vernon-Seymour corridor the local street section could appeal to a broad range of users. However, it is unclear if the painted bike lanes on Windsor will serve to attract more residents and the shared lane treatment at Chebucto/Cunard/Windsor may remain a barrier. Despite these uncertainties, the route would represent a significant improvement and, in combination with existing and future routes, should help increase the cycling mode share.
3) The Windsor-Vernon-Seymour bike route supports municipal planning objectives to add active transportation infrastructure and to support enhanced density. It links commercial districts, recreation and entertainment destinations, Dalhousie University and denser residential areas. It is also adjacent to two areas proposed for increased density.

The project has also helped HRM's active transportation planning function try new public engagement and route evaluation processes. It has brought the route concept of Local Street Bikeways to HRM and has helped planners understand the barriers (and opportunities) to implementing bike route features in the context of regulations in Nova Scotia (i.e. Motor Vehicle Act and others).

This project represented the first time that HRM engaged in such an exhaustive process to evaluate and recommend a designated bike route. That is because, until now, bike routes have been added in conjunction with other roadway projects where there were no changes required to such factors intersection capacity. In order to develop a connected network, trade-offs will be required and this project has piloted a process to assess routes with competing needs for the right-of-way. While future planning processes may not be as resource intensive as this one, they will retain key characteristics such as the use of formal criteria, consideration of alternatives, and involvement of the public and stakeholders.

The role of the public and stakeholders in this process was unprecedented for an Active Transportation project in HRM. Their perspectives and advice enriched the planning process greatly and are appreciated. While the views were sometimes divergent, there was broad agreement on two factors: 1) the need to add designated bike routes on the peninsula and to do it as soon as possible; and, 2) the need to develop a connected network. The addition of the Windsor-Vernon-Seymour route is an important next step towards meeting these expectations and represents an important advance in attracting more residents to cycling in HRM.