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Item No. 14.1.6
Halifax Regional Council
September 18, 2018

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed
Jacques Dubé, Chief Administrative Officer

DATE: September 7, 2018

SUBJECT: **Barrington Street Complete Streets Project**

ORIGIN

This report originates from staff.

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, section **318 (2)** In so far as is consistent with their use by the public, the Council has full control over the streets in the Municipality.

Halifax Regional Municipality Charter, section **322 (1)** The Council may design, lay out, open, expand, construct, maintain, improve, alter, repair, light, water, clean, and clear streets in the Municipality.

RECOMMENDATION

It is recommended that Halifax Regional Council:

1. Direct staff to maintain the current temporary configuration of Barrington Street from North Street to Niobe Gate as three travel lanes, a sidewalk and a temporary multi-use pathway over the winter 2018/19 to enable further planning and pilot testing of new configurations for transit and active transportation.

2. Direct staff to include the Barrington Street Greenway Extension as part of the 2019/20 capital planning process.

EXECUTIVE SUMMARY

Barrington Street between North Street and Devonshire Avenue has been reduced from four lanes to three since May, 2018, to facilitate the replacement of a retaining wall by the Department of National Defense. This report recommends maintaining three travel lanes in this area until spring 2019, in conjunction with providing transit priority at the Barrington Street and North Street intersection. This will allow staff to monitor the impact of three lanes on a permanent basis.

In the 1970's, plans were made to widen Barrington Street to 4 lanes between the Macdonald and MacKay Bridges based on projected traffic volumes. Today's traffic volumes do not meet the 1972 projections that were expected to be achieved by the early 1990's.

It is predicted that the overall impact on buses, trucks, and traffic will not be significant. This is because the current four lanes are very narrow and do not provide adequate space for the large volumes of trucks and buses that use this section of Barrington Street.

In addition, if three lanes are maintained, road safely can be improved, an important all ages and abilities (AAA) active transportation (AT) connection can be established, and transit priority can be incorporated.

The temporary measures can be accommodated within existing budgets. The estimated capital cost of $700,000 – to make the three lanes, the AAA connection and the transit priority measures permanent – will be proposed for inclusion in the 2019/20 capital budget.

This report provides the background and discusses the opportunities and challenges in detail.

BACKGROUND

The section of Barrington from North Street to Devonshire Street was identified in Making Connections: 2014-19 Halifax Active Transportation Priorities Plan as an "envisioned greenway". The term "envisioned greenway" means the feasibility of constructing an off-street trail is not certain.

In addition, the *Integrated Mobility Plan* (IMP) identified this section of Barrington Street on the priority connections map for multi-use pathways as a priority planning project. This planning was included in the 2018/19 capital account CTU00420.

Barrington Street is the primary street connecting downtown Halifax to the Macdonald Bridge, the MacKay Bridge, and the Fairview Overpass through to Bedford, and also acts as the primary truck route to and from the Halterm container terminal. The street cross-section varies from 4-lanes south of Devonshire Avenue, to 3-lanes between Devonshire Avenue and Richmond Street, and 2-lanes north of Richmond Street to the MacKay Bridge.

In 1972, the Halifax-Dartmouth Metropolitan Area Planning Committee commissioned a transportation study to address traffic growth and predict future traffic volumes. The study predicted that the volume of traffic between the Macdonald Bridge and Cogswell Street would rise to 52,000 vehicles per day by 1993 and recommended a plan to widen Barrington Street to 4 lanes between the Macdonald and MacKay bridges, to connect with the 4-lane cross section south of North Street and the Cogswell Interchange.

In 1990, the City of Halifax commissioned a functional design study for a 4-lane divided arterial road, with a 70 km/h design speed, and a 24m right of way. In 2016, the traffic volumes between the Macdonald Bridge and Cogswell Street had still only risen to 33,000 vehicles per day.

In the early 2000s, this section of Barrington Street between Devonshire Avenue and North Street was converted from three lanes to four lanes by reducing the width of the lanes to an average of 3.0m, with some areas as narrow as 2.7m. This has proven to be problematic for high volumes of buses and trucks.

The Department of National Defence (DND) is currently replacing a retaining wall along the east side of Barrington Street between North Street and Devonshire Avenue, and the roadway has been reduced to 3-lanes since May 2018, as a construction encroachment was necessary to complete the retaining wall repairs. The Municipality has used this as an opportunity to monitor the impact of the lane reduction at the

intersection of Barrington Street and North Street, and understand how the intersection functions as a 3-lane cross-section as compared to the existing 4 lanes.

Rather than replacing the curb and sidewalk back to the previous 4-lane cross section, the curb can be reinstated to include 3 vehicle lanes, sidewalk, and an active transportation (AT) greenway connecting the existing Barrington Street greenway, the future Cogswell Redevelopment greenway, and the future Lower Water Street or Hollis Street protected bike lanes to the Devonshire bike lanes.

The continuity of active transportation, transit, and traffic infrastructure between the Mackay Bridge and downtown Halifax should all be considered in the decision to use this right of way most effectively and work towards achieving the goals in the IMP and the Strategic Road Safety Framework.

Figure 1: Project area shown in yellow square

DISCUSSION

Table 4.1 in the Regional Municipal Planning Strategy (Regional Plan) lists several road network projects within the Region that were thought to be required to meet future vehicles demands subject to a Road Network Functional Plan, and, included the Barrington Street widening project. The Integrated Mobility Plan replaced the Road Network Functional Plan and provides a new lens to evaluate all transportation projects. The road network section of the Integrated Mobility Plan outlines why expanding roads will not solve traffic congestion. As road capacity increases (through widening and expanding roads), additional drivers choose to use the road, creating more traffic and eventually heavier congestion. Therefore, evaluating the road network needs based on “number of people moving capacity” and not “number of vehicle moving capacity” is important.

Existing Conditions

The existing cross section on Barrington Street, between North Street and Devonshire Avenue, has an average street right of way width of 18m that includes 4 traffic lanes and sidewalk on both sides (Figure 2). Lane widths are typically 3.0m wide, with some areas as narrow as 2.7m, with abutting sidewalk approximately 1.5-2.0m wide on each side. This cross section is problematic for several reasons. It creates a safety issue, which is demonstrated by the collision history (188 collisions between 2007-2017, 52 rear-end collisions, 30 same direction sideswipes, and 2 approaching side swipes) and it effectively reduces the

capacity of this section of roadway as most vehicles will not travel side by side, especially with the amount of large vehicles such as buses and trucks travelling this route.

This section of roadway has been identified on the future capital project list for resurfacing. When this street is resurfaced, the number of lanes and width of lanes will need to be re-examined.

The sidewalks also contain utility poles within the intended clear zone, resulting in an estimated effective sidewalk width between 1.0-1.5m abutting the roadway which is not accessible by all users. The existing lane widths and sidewalks do not meet current standards, and this creates safety concerns for all road users.

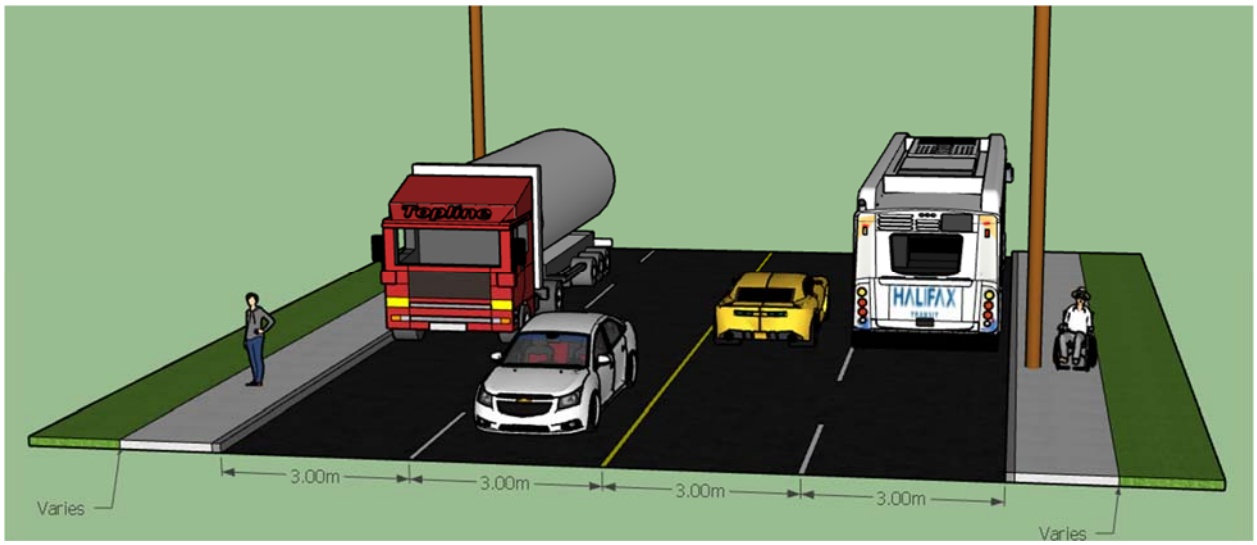

Figure 2: Typical existing cross section – Barrington St, between North St and Devonshire Ave

Figure 3: Picture of existing sidewalk on west side of Barrington St, between North St and Devonshire Ave

Speed data has been collected between Hanover Street and Young Street in May, 2018 after the construction encroachment was installed. The collected data shows the 85th % speeds to be 59 km/h southbound and 67 km/h northbound. The lowest hourly 85th% speed during all dates surveyed was 39

km/h between 7-8AM on May 31st of this year. In other words, even when traffic is congested during the AM peak hours, vehicles are still moving at an appropriate speed.

Changes to Barrington Street have the potential to advance numerous HRM priorities. These are described below.

The Integrated Mobility Plan

By 2031, the IMP aims to increase the number of trips made by AT and transit by 50% above current levels. Barrington Street does not currently provide well connected AT facilities and does not prioritize transit over private vehicles. This project provides an opportunity to make a significant change to a high-profile commuting street that will promote sustainable transportation options, and be a highly visible project that shows a commitment to implement the IMP, while still adequately accommodating private vehicles and truck traffic.

The IMP prioritizes connecting gaps in the AT network (Figure 4). It also defines streets as Transit Priority Corridors, where transit should be given priority over private vehicles. The project area on Barrington Street includes both. To balance both of these needs within the constrained environment, compromises must be made unless there is significant investment in widening the right of way (ROW). Instead of a separated transit only lane, a transit priority phase and a queue jump will be included in the design northbound at the North Street intersection. A peak hour transit lane in the southbound direction, between Glebe Street and North Street, is being investigated.

Strategic Road Safety Framework

The road safety framework was approved by Regional Council on July 17th, 2018. The framework sets out safety goals, objectives and an action plan to guide the Municipality and its road safety partners towards creating safer roads and reducing the number of fatal and injury collisions.

Action #4 of the IMP provides direction to “Implement multidisciplinary safety strategies including the Strategic Road Safety Plan, to maximize the safety and security of all people on the street, with an emphasis on the most vulnerable users.”

Active Transportation (AT)

The section in question is a gap between the existing multi-use pathway between North Street and Cornwallis Street and the existing bike lanes on Devonshire Avenue.

As previously mentioned, this section of Barrington Street has been identified as a section of “envisioned greenway” in the 2014 AT Priorities Plan. The IMP places an emphasis on filling gaps within existing networks (Figure 4). It is not practical or possible to build a multi-use trail within the existing typical ROW width, while maintaining 4-traffic lanes. Currently, the existing sidewalks are approximately 1.5m-2.0m on each side of the street, with abutting curb, and utility poles within the intended clear zone. The abutting properties on both sides of this section of Barrington Street are owned by the Department of National Defence (DND), and there are multiple retaining walls on each side of the street. This 600m section of roadway is not currently considered an All Ages and Abilities facility for either pedestrians or cyclists.

Figure 4: Active Transportation Network

Transit

Barrington Street is an important transit route, and identified as a Transit Priority Corridor in the IMP. Transit service on Barrington Street is planned to increase with the implementation of the Moving Forward Together Plan (MFTP).

Proposed Functional Design

The proposed cross-section replaces the most eastern lane of traffic with a 3m AT greenway (multi-use trail). This would result in two southbound lanes and one northbound lane for vehicle traffic, thereby creating less potential for conflict (Figure 5). This would extend the existing Barrington greenway from North Street to Devonshire Avenue, and connect the existing infrastructure gap with an all ages and abilities (AAA) bicycle facility and pedestrian infrastructure. A grassed boulevard would be incorporated adjacent to the curbs, providing separation between AT infrastructure and vehicular traffic. The boulevard could also allow street trees to be planted, on a street where there are currently no trees.

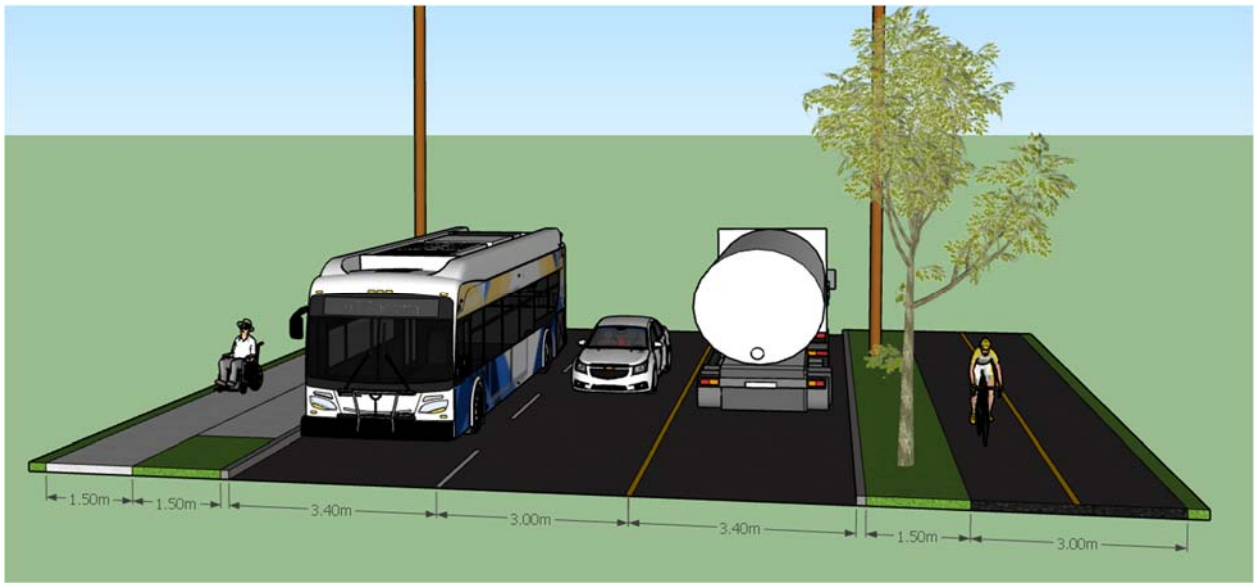

Figure 5: Typical proposed cross-section

Transit priority would also be integrated into the project. Although the AT greenway would reduce the available space for continuous bus lanes along this 600m section of roadway, this infrastructure could still

be considered in the future. The intersection of North Street and Barrington Street prior to the current construction project has a through-left and through-right lane on both the North and South approaches. The proposed configuration would align left turn lanes and a transit priority signal and "right except transit" signage would be added to the traffic signals and the northbound curb lane (Figure 6).

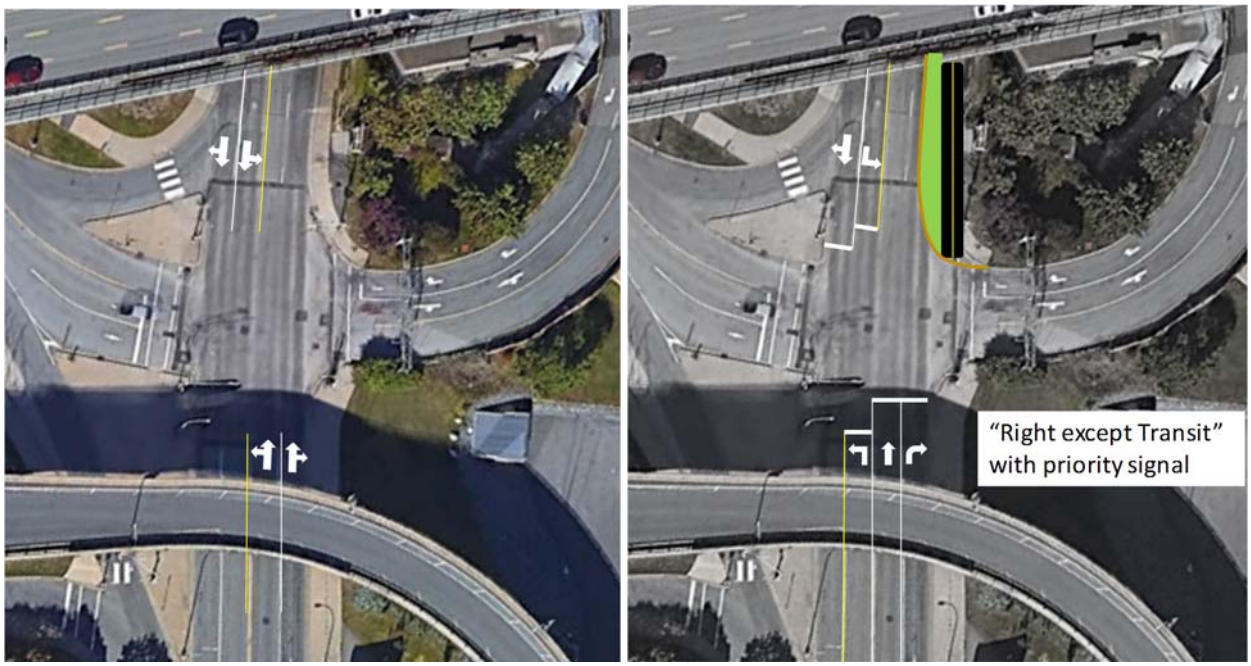

Figure 6: Existing (left) prior to the current construction project and proposed (right) configuration of the intersection of North Street and Barrington Street

As part of this project the bus stop just south of the bridge ramp will be relocated north and consolidated with the stop near North Street (Figure 7). After servicing the previous stop at Cornwallis Street, buses would be able to use the centre lane, instead of waiting in the Macdonald Bridge queue in the curb lane.

Figure 7: Bus stop relocation for transit time savings

Northbound transit should not be affected significantly by a 3-lane cross-section; by implementing the transit priority signal (queue jump for transit vehicles) and consolidating two bus stops, it is expected that transit service travel time will be less than the current travel time. Once buses get through the intersection at North Street, the Niobe Gate intersection is the only impact to vehicular flow. There are minimal left turns on the northern section of Barrington Street that delay traffic. Traffic can be heavy, but typically has continuous flow.

Southbound transit movement is a concern, but there may be ways to mitigate transit delay. The option for a southbound transit lane between Glebe Street and North Street is currently being reviewed. The curb to curb width north of Devonshire Avenue to Glebe Street is wide enough to accommodate 3-lanes. An inbound morning peak hour bus lane may be possible, with the potential to undertake a pilot project this fall. This pilot would allow staff to observe the impact of this measure on both transit vehicles and mixed traffic. In addition, pending Regional Council approval, transit will have priority on Robie Street in the future,

which provides a parallel alternative to Barrington Street. A southbound transit lane would also lessen the impact to inbound traffic, as buses would be not be stopping in the traffic lane to service bus stops, therefore allowing free flow for all vehicles.

Traffic Impacts

Traffic impacts have been monitored and data collected throughout the DND retaining wall replacement project.

Traffic conditions in this area are difficult to model due to the number of buses stopping in traffic, high number of heavy vehicles, and narrow lanes that do not make it comfortable for vehicles to drive side by side, therefore impacting the road capacity.

One of the main impacts of the proposed lane reconfiguration to traffic is queue length. To understand the queue lengths with the construction encroachment in place, time lapse cameras were installed along Barrington Street during the last week of May 2018 for the inbound direction, and the 3rd week of June 2018 for the outbound direction to capture queue lengths. Pictures were taken at 5-minute intervals between 6am and 7pm for multiple weekdays. Observing queues in the inbound direction, time lapse cameras were installed on Barrington Street at Devonshire Avenue, Duffus Street, Glebe Street, and just south of the Mackay Bridge (2.8 kilometers north of the intersection of Barrington Street and North Street.) Photographs from the time lapse cameras demonstrate that on a typical weekday, the inbound queue reached or exceeded the camera near the Mackay Bridge from approximately 08:30 until 09:05, indicating a queue length up to 2.8km or longer for approximately 35 minutes. In the outbound direction, a similar approach was taken with time lapse cameras installed on Barrington Street just south of the Macdonald Bridge ramp, at Gerrish Street, and at Cornwallis Street. Photographs from the time lapse cameras demonstrate that on a typical weekday, the outbound queue reached or exceeded the camera at Cornwallis Street from approximately 16:15 until 17:30, indicating a queue length up to 800m or longer for approximately 75 minutes. This is mostly caused by the vehicles queuing from the Macdonald Bridge ramp.

Active Transportation Benefits

Currently, this section of roadway does not provide a safe or comfortable bicycle facility and, given the narrow lane widths, vehicle speed, and high volume of large vehicles, it is very risky for bicycle use. The installation of the proposed infrastructure would create an important AAA connection in the network and help form a continuous 3 km corridor that connects the north end of the peninsula to the edge of downtown Halifax, upon completion of the Cogswell Interchange Redevelopment Project. A functional planning study will begin shortly to determine how the AT network could connect to Africville Park. It is expected that the study will show that it's possible for this AAA facility to continue north on Barrington St, and connect to Africville Park. With the completion of the Cogswell Interchange Project, a AAA bicycle connection would be complete from the most northern part of the Halifax Peninsula to Terminal Road, in the south end. Future connections to Clayton Park and Bedford will also be explored as well as potentially to Point Pleasant Park.

This connection is a small piece to a larger AAA network that would make cycling a very attractive alternative for many residents with the Municipality, and is expected to benefit the non-auto mode share targets identified in the IMP.

Transit Benefits

Transit travel times were reviewed to determine the impact of the 3-lane cross-section. GPS data was gathered from transit routes 29, 84, 85 and 185, which travel inbound and outbound on Barrington Street between the Macdonald Bridge and the Mackay Bridge, with all day service. Route 29 travels as far as Duffus Street, and routes 84, 85, and 185 travels across the MacKay Bridge to Sackville. Travel time data from the first two weeks of May, before changes were implemented, was compared to the same data for the last week of May and first week of June, to infer the effects of the changes on transit service.

The comparison of data from before and after the reduction to three lanes shows a trend of increased average travel times. However, the average inbound delay is between 50 seconds and 2.4 minutes in the AM and negligible in the PM, and on average in the outbound direction between 40 seconds and 3 minutes in the AM and 3 – 4.5 minutes in the PM. However, it should be noted that the travel time data received from Halifax Transit represents a larger segment of each route, and it is possible that fluctuations in travel time could result from incidents or bottlenecks occurring elsewhere on the route.

The delays are based on conditions caused by DND construction and does not include combining the transit stops or the addition of the transit priority phase and queue jump lane at the North Street intersection. Both initiatives will reduce the observed delay for northbound buses, and could improve travel times for transit compared to existing conditions. Adding a southbound bus only lane will significantly reduce delay to buses traveling downtown during the AM peak hours.

Truck Traffic Benefits

Barrington Street is the main truck route in and out of the Halterm Container Terminal.. The container terminal provides a significant economic benefit to the Municipality and generates between 400 and 600 trucks using Barrington Street each day. Reducing the project area cross-section from 4-lanes to 3-lanes could be viewed as a reduction in traffic capacity, which may delay trucks entering and exiting the downtown. Based on the modelling, there will be an increase in intersection delay at the intersection of North Street and Niobe Gate/Devonshire Avenue with a 3-lane cross-section, but reducing to 3 lanes would also allow for appropriate lane widths for a street with high truck volumes. Trucks and buses typically have a width of 2.6m at the wheels, and 3.2m including mirrors. The lane widths within the study area average 3.0m. Because of the narrow lanes, trucks and buses do not typically drive beside each other. They typically operate in an offset manner to avoid conflict. Therefore, the existing 4-lane cross-section within the project area does not have the expected traffic capacity of a typical 4-lane cross-section. The addition of a southbound bus lane will also eliminate buses from blocking trucks while servicing stops during the morning peak hours. During off-peak hours, there is very little impact to truck traffic. It is expected that the impact on truck and general vehicle travel time will be similar to that of buses as noted above.

Stakeholder Engagement

A meeting with the Port of Halifax was held to discuss the challenges and opportunities with this proposal as it relates to the Port. Based on the data provided in this report, the Port does not object to this proposal. In addition, DND has been engaged in the process and staff is working with them to determine construction synergies.They have indicated that this project provides benefits to their staff and are looking to determine if they can contribute more to the capital costs of the project or their reinstatement commitments.

The Department of National Defense is responsible for the reinstatement of the eastern sidewalk that has been temporarily removed under their construction project. If Council approves this project as recommended, an active transportation trail will replace this sidewalk. Cost sharing opportunities with DND are currently being discussed. If Council directs Staff to reinstate Barrington St to its previous cross-section, DND would be responsible for replacing the concrete sidewalk.

Integration with Other Transportation Projects

This project will be integrated into or collaborate with other HRM projects underway or beginning in the near future, such as:

- The *Moving Forward Together Plan* Corridor Route Study: consideration for the routing of Corridor Routes described in the plan.
- Functional study to explore an active transportation connection to Africville Park through the north end of Halifax and along Barrington Street north of Devonshire Avenue (fall 2018 start).
- The Cogswell Interchange Project will extend the urban fabric northerly, slow vehicle traffic entering the downtown, and add a AAA bicycle facility and transit priority. This project will extend the vision further north on Barrington Street.
- The Lower Water St and Hollis St Downtown Bikeway Project is currently under functional design.
- A consultant is currently working on a functional study to explore options to allow northbound buses to access the Macdonald Bridge from the Barrington St bridge ramp.
- The Macdonald Bridge Bikeway Project.
- An RFP has been issued for the Bedford Hwy Functional Planning Study. Active transportation and transit priority are primary considerations for the study. Future projects could connect AT and transit priority from Barrington Street to the Bedford Highway, through the Windsor Street intersection.
- Gottingen Street northbound bus only monitoring and evaluation plan.

FINANCIAL IMPLICATIONS

The total cost to construct new sidewalk on the west side of Barrington St, the active transportation trail on the east side, and paving between North St and Devonshire Ave is estimated at $700,000. The Municipality's cost would be $700,000, less any potential cost sharing from DND. Funding for the construction work will be considered as part of the 2019/20 capital budgeting process.

Funding is currently available in capital project # CR180001, Active Transportation, to maintain the current (temporary) configuration of Barrington Street this fiscal year.

All other preparatory and planning work for this project can be accommodated within approved 2018/19 operating budgets.

RISK CONSIDERATION

There are no significant risks associated with the recommendations in this report. The risks considered rate Low.

COMMUNITY ENGAGEMENT

If the recommendation included in this report is approved by Regional Council, staff will conduct a Public Information Session. The results of the Public Information Session, additional data collection, transit priority pilot, as well as the proposed detailed design for approval as a permanent change will be presented to Regional Council in the spring of 2019.

ENVIRONMENTAL IMPLICATIONS

The primary environmental implications of priority to the municipality include water quality, energy consumption and solid waste management. None of these implications are associated with the recommendations of this report.

ALTERNATIVES

1. Regional Council could direct staff to implement the project immediately (subject to identification of available funding) based on the data outlined in this report. This is not recommended for the reasons outlined in the report.

2. Regional Council could direct staff to reinstate Barrington Street to its previous cross-section. This is not recommended as it does not align with the Integrated Mobility Plan or Strategic Road Safety Framework, and includes substandard lane widths and sidewalks. This is not recommended for the reasons outlined in the report.

ATTACHMENTS

None.

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

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