

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

Item 7, Report No. 10, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on March 20, 2018.

7 VAUGHAN METROPOLITAN CENTRE CYCLING NETWORK, PROPOSED REVISIONS TO THE VMC STREETScape AND OPEN SPACE PLAN AND VMC SECONDARY PLAN ROAD NETWORK

The Committee of the Whole recommends approval of the recommendation contained in the following report of the Deputy City Clerk and Manager, Administrative Services, dated March 6, 2018:

Recommendation

The Deputy City Clerk & Manager, Administrative Services, on behalf of the Vaughan Metropolitan Centre Sub-Committee, forwards the following recommendation from its meeting of February 13, 2018, (Item 3, Report No. 1) for Council's consideration:

The Vaughan Metropolitan Centre Sub-Committee recommended that the following recommendation be forwarded to Council for approval:

1. That the recommendation contained in the following report of the Deputy City Manager, Public Works and the Deputy City Manager, Planning and Growth Management dated February 13, 2018, be approved.

Report of the Deputy City Manager, Public Works and the Deputy City Manager, Planning and Growth Management dated February 13, 2018

Recommendations

1. That Council endorse a revised Vaughan Metropolitan Centre Cycling Network Plan included as Attachment #2 to this report (Figure 5.3: Cycling Network in the Vaughan Metropolitan Centre Streetscape and Open Space Plan); and
2. That staff revise the associated road cross-sections in Appendix A of the Vaughan Metropolitan Centre Secondary Plan) in accordance with the revised Vaughan Metropolitan Centre Cycling Network Plan.

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Report Highlights

- Transportation-related matters continue to be top-of-mind among Vaughan residents according to the 2016 Vaughan Satisfaction Survey.
- There is significant opportunity, particularly in new development areas, to provide access to high-quality and affordable sustainable transportation options for Vaughan residents.
- Many major cities across Canada are retrofitting their downtowns to include a denser network of separated facilities.
- The VMC, still in its emerging stages, provides the City with a unique opportunity to allocate space for cycling now, to avoid impacts to the boulevard space or vehicular roadway in the future.
- Anticipated development, population density, land-use mix, and higher order transit services in the VMC substantiate the need for a grid-network of connected and separated cycling facilities for all ages and abilities.

Background

Staff are updating the City's 2007 Pedestrian and Bicycle Master Plan. The primary focus of the study is to develop a plan based on extensive public and stakeholder input such as resident surveys, face to face conversations, community pop-ups, etc. Residents reported through the phase one survey that they feel uncomfortable mixing with vehicular traffic and would bike more in Vaughan if separated facilities were available.

Residents and stakeholders have also indicated that connections to and from the City's new downtown, specifically the subway station and transit facilities, and a denser and connected network of separated cycling facilities within the VMC, should be a key priority.

Given the rapid development occurring in the VMC, the need to advance a focused report on the VMC street and cycling network was identified in advance of the Pedestrian and Bicycle Master Plan Update scheduled for completion in 2018. The Pedestrian and Bicycle Master Plan Update is one of the action items identified under Term of Council Priority #2 - Continue to develop transit, cycling and pedestrian options to get around the City.

Previous Reports/Authority

[April 19, 2017, Finance, Administration and Audit Committee \(Item 8, Report No. 4, Recommendation 1\)](#)

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[December 15, 2015, Committee of the Whole \(Item 23, Report No. 44, Recommendation 2\)](#)

Analysis and Options

Vaughan Official Plan 2010 calls for a transportation transformation in how people move around Vaughan

Since the 1970s, Vaughan has been one of the fastest growing municipalities in Canada. This growth has taken place in a primarily suburban form and auto-oriented structure focused on moving vehicles rather than people. Vaughan Official Plan 2010 (VOP 2010) calls for a transportation transformation in how people move around Vaughan by establishing a comprehensive transportation network that allows a full range of mobility options, including walking, rolling, cycling and transit. The 2012 Transportation Master Plan update further indicates that it will take more than just large investments in transit infrastructure to cope with future transportation demand.

Transportation-related matters continue to be top-of-mind among Vaughan residents according to the 2016 Vaughan Citizen Satisfaction Survey

The results of the 2016 City of Vaughan Citizen Satisfaction Survey indicate that transportation-related matters continue to be top-of-mind among Vaughan residents with 62% of respondents citing transportation as the most important issue facing their community. When asked specifically about cycling infrastructure, only 20% of respondents were very satisfied, indicating that there is considerable room for improvement.

There is significant opportunity, particularly in new development areas, to provide access to high-quality and affordable sustainable transportation options

One advantage in Vaughan is that many areas are still under development. Therefore, there is significant opportunity to provide access to high-quality and affordable sustainable transportation opportunities from the start so that all Vaughan residents get where they need to go. Providing balanced transportation networks is not only a more inclusive approach to urban planning and transportation development but will also help manage existing and potential future vehicular traffic congestion in the City.

The developing VMC provides one such opportunity, especially given the anticipated population density and land-use mix

The 2017 Growth Plan for the Greater Golden Horseshoe identifies the VMC as a focal point for growth and intensification with a target of 200 people and jobs per hectare. To meet the density target, a population of approximately 25,000 residents and 11,500 jobs are planned for the VMC area by 2031 (VMC SP). However, early development in the VMC is exceeding these targets and will be revisited during the City's 2018 municipal

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comprehensive review. As such, in a relatively short time, the VMC will become the City's major urban hub with the highest concentration of residents and employment. This combined with the VMC SP's land use strategy, creates short trip opportunities and are common metrics for transportation choices such as walking, cycling and transit.

2012 Transportation Master Plan indicates that it will take more than just large investments in transit infrastructure to cope with future transportation demand

At the centre of the planned VMC transportation network is the Toronto-York Spadina Subway line, the Highway 7 vivaNext Bus Rapid Transitway and the York Region Transit Bus Terminal. These higher order transit services which have been completed (i.e. subway) or are nearing completion have established the VMC as an Anchor Mobility Hub. The 2012 Transportation Master Plan indicates that it will take more than just large investments in transit infrastructure to cope with future transportation demand. Higher-order walking and cycling infrastructure, connected to transit is needed to provide the balanced transportation network called for in VOP 2010 and the VMC SP. Cycling provides a unique opportunity in that catchment areas are much larger for cycle-transit users than for traditional transit users who access stations by foot. Connecting bicycle travel to transit permits areas more distant from transit to be accessible further decreasing the need to drive and/or own a personal vehicle.

In the last five years there has been significant support and advancement at the provincial level for cycling

In the last ten years, there has been a steady increase in societal and governmental interest and support in cycling as a viable and healthy mode of transportation. With the release of the #CycleON: Ontario's Cycling Strategy in 2013, there has been significant support and advancement, particularly at the provincial level, for cycling through the development of strategies, policies, legislation and guidelines for the planning, design, implementation and operation of safer cycling facilities. Including:

- [2017 Ontario Municipal Commuter Cycling Program \(MCC\) - Ontario to invest \\$93 million in cycling infrastructure](#) – Vaughan was awarded \$908,612 in the first year of the program
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- [2016 Bill 213, Highway Traffic Amendment Act \(Careless Driving\), second reading - Increased fines for careless driving causing serious bodily harm or death](#)
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Direction from the Province is anticipated on the use of power-assisted bicycles and limited-speed e-scooters in cycling facilities, an important consideration with Vaughan's aging population

With Vaughan's aging population, there may be opportunity to accommodate other forms of transportation within the proposed all ages and abilities "cycling" network such as power-assisted bicycles and limited-speed e-scooters. Direction from the Province is anticipated regarding the accommodation of these devices with the release of Action 2.0 of #CycleON: Ontario's Cycling Strategy.

Many major cities across Canada are retrofitting their downtowns to include a denser network of separated cycling facilities to make street-level interactions a more comfortable and predictable experience for all users

Many major cities across Canada are retrofitting their downtowns to include a denser network of separated cycling facilities to make street-level interactions a more comfortable and predictable experience for all users. These cities have seen major societal and economic benefits in implementing these networks. For example:

Since the implementation of their first cycle track on Sherbourne Street in 2012, the City of Toronto has been upgrading many of their downtown bike lanes to cycle tracks to improve safety of corridor users and discourage motorists from parking, standing or stopping illegally in on-street bicycle lanes. Most recently, in May 2016, Toronto Council approved the implementation of temporary separated cycling facilities along a 2.5km stretch of Bloor Street. The pilot was installed in late August 2016 and over a one-year period, extensive data was collected to evaluate the performance of the project including a comprehensive Economic Impact Study. This analysis showed:

- Total number of conflicts between all road users (i.e. motorist-motorist, cyclist-motorist, pedestrian-motorist and pedestrian-cyclists) decreased by 44%.

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- All road users feel safer on Bloor Street after the implementation of Bloor Street separated bike lanes
- Most merchants reported an increase in the number of customers and most visitors reported spending more and visiting more frequently.
- Total customer spending in the Bloor Street pilot area increased more than in the surrounding area with a 4.45% growth in customer spending in the pilot area (Moneris Solutions Customer Spending Analysis).

Evaluation of the Bloor Street Bike Lane Pilot project is thought to be the most comprehensive and evidenced based evaluation completed on a transportation project in Toronto's history. In November 2017, Toronto Council approved the installation of permanent cycle tracks. For more information see [Bloor Street West Bike Lane Pilot Project Evaluation Report, Public Works and Infrastructure Committee, October 3, 2017](#).

In 2014, City of Calgary Council approved a budget of \$7.1 million to pilot 6.5 km network of cycle tracks and shared space in the Calgary City Centre for 18 months. The pilot network was constructed in spring of 2015 and by the end of 2016, Calgary Council voted to make the cycle tracks and associated design enhancements permanent. The presence of an integrated multi-modal transportation system has improved Calgary's reputation in being a more attractive city to live, work and visit and has made cycling a viable transportation option in the City's busiest area. Initial before/after data has shown:

- 40% increase in Calgarians arriving by bicycle since the cycle tracks were installed
- Motor vehicle collision frequency decreased or remained the same on each cycle track corridor
- Separating people cycling, walking and driving has reduced sidewalk riding from 16% to 2% and improved the perception of safety for people cycling while maintaining the perception of safety for people driving and walking along cycle track routes

For more information see [Centre City Cycle Track Network Pilot Project Final Report to Council dated December 8, 2016](#).

Other examples include:

- In October 2016, Edmonton City Council unanimously approved \$7.5 million to retrofit the downtown street network and install a 7.8 km fine grid network of cycling facilities less than a year, by the summer of 2017. Early data collection shows that the use of Edmonton's downtown cycling facilities nearly doubled in the first month.

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- In December 2017, Halifax Regional Council unanimously approved an Integrated Mobility Plan (IMP), adding many amendments to speed up progress including the implementation of an All Ages & Abilities Bicycle Network of protected bikeways and active transportation greenways.

The VMC can be a destination for cycling tourism

The VMC SP and SOSP identify streets in the VMC as places of multi-modal movement, and spaces of social, cultural and economic activity. The vision is that all modes of transportation seamlessly come together to support an intense concentration of attractions such as businesses, rich and diverse open spaces, urban parks, public squares and art, year-round urban recreational activities, City-wide entertainment and cultural events and festivals. According to [Ontario's Cycling Tourism Plan](#), in 2014, 1.7 million visitors to Ontario participated in cycling and spent \$428 million. Cycling visitors generally spent more on average per trip than other visitors, \$255/trip for cycling tourists compared to \$171/trip for total visitors.

The City has a unique opportunity to allocate space for cycling now, to avoid impacts to the boulevard space or vehicular roadway in the future and reduce the risk of implementing a less effective and more expensive retrofit

The VMC, as Vaughan's brand-new downtown, is still in its emerging stages. The City has a unique opportunity to allocate space for cycling now, to avoid impacts to the boulevard space or vehicular roadway in the future and reduce the risk of implementing a less effective and more expensive retrofit. The [2017 Town of Oakville Active Transportation Master Plan](#) estimates the implementation of a uni-directional cycle track, raised and curb separated, in an existing right-of-way (i.e. retrofit) to cost between \$250,000 - \$600,000 / lane-km depending on the extent of modifications required. Based on recent projects, including the first cycle track constructed in the VMC along Apple Mill Road and Millway Avenue, the cost of constructing a cycle track as part of a new construction project is approximately \$200,000 – 300,000 / lane-km.

The Cycling and Pedestrian Advisory Task Force recommended safe, connected cycling infrastructure through the provision of protected cycle routes

In February 2017, the Cycling and Pedestrian Advisory Task Force completed its mandate and presented their Findings Report which was received by Council. Recommendations included:

1. Priority be given to providing designated cycling routes on regional roads/local collector roads.
2. Safe, connected cycling infrastructure be established.
3. Improve safety through protected cycling routes.

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Residents would feel more comfortable riding a bike in Vaughan if they did not have to mix with vehicular traffic

The Pedestrian and Bicycle Master Plan Update community survey indicated that most respondents (84% of 654 respondents) would feel more comfortable riding a bike in Vaughan if they did not have to mix with vehicular traffic. 80 hours of face-to-face conversations with over 2,700 residents, 654 surveys as well as 929 written comments have revealed that the number one reason residents do not bike more in Vaughan is that they feel unsafe. The provision of safer cycling infrastructure, separated from vehicular traffic would result in more residents cycling supporting Vaughan's mandate of providing residents with safer, low-carbon, viable transportation options.

Raised and separated cycle tracks on all collector and City arterial roads within the VMC are recommended

City arterial and collector streets form a grid-like network allowing for convenient and efficient movement between origins and destinations providing effective routing for transit vehicles, bicycles and pedestrians (VOP 2010). A recommendation of the Pedestrian and Bicycle Master Plan Update study is to allocate space for cycling on all collector and City arterial roads in the VMC to provide a minimum grid network of raised and separated cycle tracks.

The original VMC Streetscape and Open Space Plan (SOSP) proposed approximately 6.1 km of separated cycle tracks and 1.6 km of painted bike lanes on municipal rights-of-way as shown on Attachment #1. The proposed revision increases the municipal network to 13.4 km of separated cycle tracks yielding approximately 7.1 km of east-west corridors and 6.3 km of north-south corridors, as shown on Attachment #2. Thus, creating a fine grid network of connected and physically separated cycling facilities within 250 m of all residents and employees in the City's new urban centre. See Attachment #3 for a summary of proposed changes. A 26-metre road-right-of way is required. This recommendation has no impact on the urban boulevards or streetscape standards approved by Council.

Cycle tracks cost less than traditional on-road bike lanes

A recent study by the City of Ottawa Infrastructure Standards Review (ISR) Working Group concluded that in new road construction or reconstruction projects, constructing raised cycle tracks in the boulevard as opposed to on-road bike lanes saves a substantial amount of construction costs. This savings opportunity is attributed to infrastructure efficiencies from the difference in roadbed and pavement structure required for cycle tracks compared to traditional on-road bike lanes that are designed to the same specifications as the road way. The ISR Working Group concluded that relocating the bike lane from the roadway to the boulevard would generate \$41,700 /km cost savings ([Infrastructure Standards Review, Report to Planning Committee and Council, May 2017](#)).

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When looking at the City's recent Millway Avenue and Apple Mill Road Project, considering roadbed and pavement structure alone, the cost of the on-road facility was \$48.27 /m² whereas the cost of the asphalt cycle track was \$33.42 /m².

There will be additional maintenance and operations associated with the added cycling infrastructure

There will be additional maintenance and operations (e.g. sweeping, winter snow removal for serviced facilities, repairs, general maintenance) associated with the added cycling infrastructure dependent on the level of service that is identified through the VMC Operation and Maintenance Plan. This may require additional staff resources, equipment and budget for maintenance operations as the network develops over time.

A recent report to Markham Council on the subject of [Highway 7 In-boulevard Cycle Track Annual Maintenance Policy](#) estimated that sweeping and regular winter maintenance costs at \$10,587 / lane-km per year. This estimate assumes that the cycle tracks would be maintained to the same level of standard as sidewalks for non-winter months and maintained to the same level of service as the adjacent roadway, Class 2 highway, for winter months.

A [report to Toronto Public Works and Infrastructure Committee](#) estimated annual winter maintenance costs at \$7,000 / lane-km while annual sweeping cost at \$12,000 / lane-km for the Bloor Street West separated bike lanes. Sweeping costs are high given the Bloor cycling facility is located at road level and will experience a higher level of debris accumulation versus an elevated facility. Total sweeping and winter maintenance costs were estimated at \$19,000 / lane-km.

York Region is designing and implementing a number of separated cycling facilities in Vaughan and across York Region. To understand the potential cost of maintaining these facilities the Region is estimating that the maintenance of cycle tracks will cost approximately \$11,039 / lane-km per year (not based on actual costs). This includes an estimated summer sweeping rate of \$385 / lane-km, snow removal rate of \$8,000 / lane-km and \$2,654 / lane-km for de-icing/salting.

During the 2015-2016 winter season, Calgary spent about \$162,000 on snow clearing and removal of their 6.5 km Centre City Cycle Track Network which is approximately \$12,462 / lane-km per year.

Based on the above information it is estimated that annual sweeping and winter maintenance will cost \$12,000-\$15,000 / lane-km.

Financial Impact

Based on recent projects, including the first cycle track constructed in the VMC along Apple Mill Road and Millway Avenue, the cost of cycle track construction is approximately \$200,000 - \$300,000 / lane-km (including intersection treatments). The

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original VMC SOSP proposed approximately 6.1 km of separated cycle tracks and 1.6 km of painted bike lanes on municipal rights-of-way as shown on Attachment #1. This new proposal as shown on Attachment #2 would increase the VMC municipal cycling network to 13.4 km (26.8 lane-km) of separated cycle tracks.

The total cost to implement the proposed 13.4 km (26.8 lane-km) VMC cycling network is estimated to be \$6,700,000. The network is expected to be implemented in stages, concurrently with streetscape works, considering the phasing and timing of private sector development applications or public road projects as identified in the VMC Collector Roads Functional Design Study (DE-7186-18) proposed in the 2018 budget.

The introduction of cycle tracks on all collector and City arterial roadways in the VMC are considered growth related and therefore, capital funding is proposed to come from City-wide Development Charges. If the proposed revisions to the VMC cycling network are endorsed by Council, the individual projects will be added to the 2018 Development Charge Background Study Update. Once individual streetscape projects proceed, project capital costs will be identified for approval through the annual budget process. There will be additional maintenance and operations work (e.g. sweeping, winter snow removal for serviced facilities, repairs, general maintenance) associated with the added cycling infrastructure dependent on the level of service that is identified through the VMC Operation and Maintenance Plan. It is estimated that annual sweeping and winter maintenance will cost \$12,000-\$15,000 / lane-km. Upon full build-out assuming all cycle track routes receive winter maintenance, the annual cost to maintain the proposed 13.4 km (26.8 lane-km) VMC Cycling Network is estimated to be \$362,000 per year (sweeping and snow removal only).

Broader Regional Impacts/Considerations

York Region staff have been directly involved and consulted throughout the Pedestrian and Bicycle Master Plan update. York Region Transportation Services, York Region Community and Health Services, York Region Police, York Region Transit, York Region School Boards, etc. participate as members of the Stakeholder Advisory Group.

A fine-grid network of separated cycling facilities will support the York Region Transit system providing more convenient and comfortable access to the VMC Bus Terminal, the VivaNext BRT on Highway 7 and other local transit routes servicing the VMC.

Conclusion

With the anticipated development, population density and land use mix, as well as the existing and forthcoming higher order transit services, it is recommended that space be allocated for cycling on all collector and City arterial roads in the VMC, to avoid potential impacts to the boulevard space or vehicular roadway in the future.

It is recommended that cycle tracks be implemented in this space to develop a denser

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network of separated cycling facilities to make street-level interactions a more comfortable and predictable experience for all users. This recommendation supports Council's priority to invest, renew and manage an improved municipal road network which focuses on the safety and well-being of our citizens travelling by all modes of transportation and cultivates an environmentally sustainable City.

For more information, please contact: Selma Hubjer, Transportation Planning Manager, x8674

Attachments

1. Figure 5.3 Cycling Network, Vaughan Metropolitan Centre Streetscape and Open Space Plan (VMC SOS), November 2015
2. Revised Figure 5.3 Cycling Network, Vaughan Metropolitan Centre Streetscape and Open Space Plan (VMC SOS), February 2018
3. Table 1 – Summary of VMC Cycling Network Recommendations

Prepared by

Dorothy Kowpak, Active & Sustainable Transportation Project Manager, x8812

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)

Item:



Committee of the Whole Report

DATE: Tuesday, March 06, 2018

WARD: 4

**TITLE: VAUGHAN METROPOLITAN CENTRE CYCLING NETWORK,
PROPOSED REVISIONS TO THE VMC STREETScape AND
OPEN SPACE PLAN AND VMC SECONDARY PLAN ROAD
NETWORK**

FROM:

Todd Coles, Deputy City Clerk & Manager, Administrative Services

ACTION: DECISION

Recommendation

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Direction from the Province is anticipated on the use of power-assisted bicycles and limited-speed e-scooters in cycling facilities, an important consideration with Vaughan's aging population

With Vaughan's aging population, there may be opportunity to accommodate other forms of transportation within the proposed all ages and abilities "cycling" network such as power-assisted bicycles and limited-speed e-scooters. Direction from the Province is anticipated regarding the accommodation of these devices with the release of Action 2.0 of #CycleON: Ontario's Cycling Strategy.

Many major cities across Canada are retrofitting their downtowns to include a denser network of separated cycling facilities to make street-level interactions a more comfortable and predictable experience for all users

Many major cities across Canada are retrofitting their downtowns to include a denser network of separated cycling facilities to make street-level interactions a more comfortable and predictable experience for all users. These cities have seen major societal and economic benefits in implementing these networks. For example:

Since the implementation of their first cycle track on Sherbourne Street in 2012, the City of Toronto has been upgrading many of their downtown bike lanes to cycle tracks to improve safety of corridor users and discourage motorists from parking, standing or stopping illegally in on-street bicycle lanes. Most recently, in May 2016, Toronto Council approved the implementation of temporary separated cycling facilities along a 2.5km stretch of Bloor Street. The pilot was installed in late August 2016 and over a one-year period, extensive data was collected to evaluate the performance of the project including a comprehensive Economic Impact Study. This analysis showed:

- Total number of conflicts between all road users (i.e. motorist-motorist, cyclist-motorist, pedestrian-motorist and pedestrian-cyclists) decreased by 44%.
- All road users feel safer on Bloor Street after the implementation of Bloor Street separated bike lanes
- Most merchants reported an increase in the number of customers and most visitors reported spending more and visiting more frequently.
- Total customer spending in the Bloor Street pilot area increased more than in the surrounding area with a 4.45% growth in customer spending in the pilot area (Moneris Solutions Customer Spending Analysis).

Evaluation of the Bloor Street Bike Lane Pilot project is thought to be the most comprehensive and evidenced based evaluation completed on a transportation project in Toronto's history. In November 2017, Toronto Council approved the installation of permanent cycle tracks. For more information see [Bloor Street West Bike Lane Pilot Project Evaluation Report, Public Works and Infrastructure Committee, October 3, 2017](#).

In 2014, City of Calgary Council approved a budget of \$7.1 million to pilot 6.5 km network of cycle tracks and shared space in the Calgary City Centre for 18 months. The pilot network was constructed in spring of 2015 and by the end of 2016, Calgary Council voted to make the cycle tracks and associated design enhancements permanent. The presence of an integrated multi-modal transportation system has improved Calgary's reputation in being a more attractive city to live, work and visit and has made cycling a viable transportation option in the City's busiest area. Initial before/after data has shown:

- 40% increase in Calgarians arriving by bicycle since the cycle tracks were installed
- Motor vehicle collision frequency decreased or remained the same on each cycle track corridor
- Separating people cycling, walking and driving has reduced sidewalk riding from 16% to 2% and improved the perception of safety for people cycling while maintaining the perception of safety for people driving and walking along cycle track routes

For more information see [Centre City Cycle Track Network Pilot Project Final Report to Council dated December 8, 2016](#).

Other examples include:

- In October 2016, Edmonton City Council unanimously approved \$7.5 million to retrofit the downtown street network and install a 7.8 km fine grid network of cycling facilities less than a year, by the summer of 2017. Early data collection shows that the use of Edmonton's downtown cycling facilities nearly doubled in the first month.
- In December 2017, Halifax Regional Council unanimously approved an Integrated Mobility Plan (IMP), adding many amendments to speed up progress including the implementation of an All Ages & Abilities Bicycle Network of protected bikeways and active transportation greenways.

The VMC can be a destination for cycling tourism

The VMC SP and SOSP identify streets in the VMC as places of multi-modal movement, and spaces of social, cultural and economic activity. The vision is that all modes of transportation seamlessly come together to support an intense concentration of attractions such as businesses, rich and diverse open spaces, urban parks, public squares and art, year-round urban recreational activities, City-wide entertainment and cultural events and festivals. According to [Ontario's Cycling Tourism Plan](#), in 2014, 1.7

million visitors to Ontario participated in cycling and spent \$428 million. Cycling visitors generally spent more on average per trip than other visitors, \$255/trip for cycling tourists compared to \$171/trip for total visitors.

The City has a unique opportunity to allocate space for cycling now, to avoid impacts to the boulevard space or vehicular roadway in the future and reduce the risk of implementing a less effective and more expensive retrofit

The VMC, as Vaughan's brand-new downtown, is still in its emerging stages. The City has a unique opportunity to allocate space for cycling now, to avoid impacts to the boulevard space or vehicular roadway in the future and reduce the risk of implementing a less effective and more expensive retrofit. The [2017 Town of Oakville Active Transportation Master Plan](#) estimates the implementation of a uni-directional cycle track, raised and curb separated, in an existing right-of-way (i.e. retrofit) to cost between \$250,000 - \$600,000 / lane-km depending on the extent of modifications required. Based on recent projects, including the first cycle track constructed in the VMC along Apple Mill Road and Millway Avenue, the cost of constructing a cycle track as part of a new construction project is approximately \$200,000 – 300,000 / lane-km.

The Cycling and Pedestrian Advisory Task Force recommended safe, connected cycling infrastructure through the provision of protected cycle routes

In February 2017, the Cycling and Pedestrian Advisory Task Force completed its mandate and presented their Findings Report which was received by Council. Recommendations included:

1. Priority be given to providing designated cycling routes on regional roads/local collector roads.
2. Safe, connected cycling infrastructure be established.
3. Improve safety through protected cycling routes.

Residents would feel more comfortable riding a bike in Vaughan if they did not have to mix with vehicular traffic

The Pedestrian and Bicycle Master Plan Update community survey indicated that most respondents (84% of 654 respondents) would feel more comfortable riding a bike in Vaughan if they did not have to mix with vehicular traffic. 80 hours of face-to-face conversations with over 2,700 residents, 654 surveys as well as 929 written comments have revealed that the number one reason residents do not bike more in Vaughan is that they feel unsafe. The provision of safer cycling infrastructure, separated from vehicular traffic would result in more residents cycling supporting Vaughan's mandate of providing residents with safer, low-carbon, viable transportation options.

Raised and separated cycle tracks on all collector and City arterial roads within the VMC are recommended

City arterial and collector streets form a grid-like network allowing for convenient and efficient movement between origins and destinations providing effective routing for transit vehicles, bicycles and pedestrians (VOP 2010). A recommendation of the Pedestrian and Bicycle Master Plan Update study is to allocate space for cycling on all collector and City arterial roads in the VMC to provide a minimum grid network of raised and separated cycle tracks.

The original VMC Streetscape and Open Space Plan (SOSP) proposed approximately 6.1 km of separated cycle tracks and 1.6 km of painted bike lanes on municipal rights-of-way as shown on Attachment #1. The proposed revision increases the municipal network to 13.4 km of separated cycle tracks yielding approximately 7.1 km of east-west corridors and 6.3 km of north-south corridors, as shown on Attachment #2. Thus, creating a fine grid network of connected and physically separated cycling facilities within 250 m of all residents and employees in the City's new urban centre. See Attachment #3 for a summary of proposed changes. A 26-metre road-right-of way is required. This recommendation has no impact on the urban boulevards or streetscape standards approved by Council.

Cycle tracks cost less than traditional on-road bike lanes

A recent study by the City of Ottawa Infrastructure Standards Review (ISR) Working Group concluded that in new road construction or reconstruction projects, constructing raised cycle tracks in the boulevard as opposed to on-road bike lanes saves a substantial amount of construction costs. This savings opportunity is attributed to infrastructure efficiencies from the difference in roadbed and pavement structure required for cycle tracks compared to traditional on-road bike lanes that are designed to the same specifications as the road way. The ISR Working Group concluded that relocating the bike lane from the roadway to the boulevard would generate \$41,700 /km cost savings ([Infrastructure Standards Review, Report to Planning Committee and Council, May 2017](#)).

When looking at the City's recent Millway Avenue and Apple Mill Road Project, considering roadbed and pavement structure alone, the cost of the on-road facility was \$48.27 /m² whereas the cost of the asphalt cycle track was \$33.42 /m².

There will be additional maintenance and operations associated with the added cycling infrastructure

There will be additional maintenance and operations (e.g. sweeping, winter snow removal for serviced facilities, repairs, general maintenance) associated with the added cycling infrastructure dependent on the level of service that is identified through the VMC Operation and Maintenance Plan. This may require additional staff resources, equipment and budget for maintenance operations as the network develops over time.

A recent report to Markham Council on the subject of [Highway 7 In-boulevard Cycle Track Annual Maintenance Policy](#) estimated that sweeping and regular winter maintenance costs at \$10,587 / lane-km per year. This estimate assumes that the cycle

tracks would be maintained to the same level of standard as sidewalks for non-winter months and maintained to the same level of service as the adjacent roadway, Class 2 highway, for winter months.

A [report to Toronto Public Works and Infrastructure Committee](#) estimated annual winter maintenance costs at \$7,000 / lane-km while annual sweeping cost at \$12,000 / lane-km for the Bloor Street West separated bike lanes. Sweeping costs are high given the Bloor cycling facility is located at road level and will experience a higher level of debris accumulation versus an elevated facility. Total sweeping and winter maintenance costs were estimated at \$19,000 / lane-km.

York Region is designing and implementing a number of separated cycling facilities in Vaughan and across York Region. To understand the potential cost of maintaining these facilities the Region is estimating that the maintenance of cycle tracks will cost approximately \$11,039 / lane-km per year (not based on actual costs). This includes an estimated summer sweeping rate of \$385 / lane-km, snow removal rate of \$8,000 / lane-km and \$2,654 / lane-km for de-icing/salting.

During the 2015-2016 winter season, Calgary spent about \$162,000 on snow clearing and removal of their 6.5 km Centre City Cycle Track Network which is approximately \$12,462 / lane-km per year.

Based on the above information it is estimated that annual sweeping and winter maintenance will cost \$12,000-\$15,000 / lane-km.

Financial Impact

Based on recent projects, including the first cycle track constructed in the VMC along Apple Mill Road and Millway Avenue, the cost of cycle track construction is approximately \$200,000 - \$300,000 / lane-km (including intersection treatments). The original VMC SOSP proposed approximately 6.1 km of separated cycle tracks and 1.6 km of painted bike lanes on municipal rights-of-way as shown on Attachment #1. This new proposal as shown on Attachment #2 would increase the VMC municipal cycling network to 13.4 km (26.8 lane-km) of separated cycle tracks.

The total cost to implement the proposed 13.4 km (26.8 lane-km) VMC cycling network is estimated to be \$6,700,000. The network is expected to be implemented in stages, concurrently with streetscape works, considering the phasing and timing of private sector development applications or public road projects as identified in the VMC Collector Roads Functional Design Study (DE-7186-18) proposed in the 2018 budget.

The introduction of cycle tracks on all collector and City arterial roadways in the VMC are considered growth related and therefore, capital funding is proposed to come from City-wide Development Charges. If the proposed revisions to the VMC cycling network are endorsed by Council, the individual projects will be added to the 2018 Development Charge Background Study Update. Once individual streetscape projects proceed, project capital costs will be identified for approval through the annual budget process. There will be additional maintenance and operations work (e.g. sweeping, winter snow removal for serviced facilities, repairs, general maintenance) associated with the added

cycling infrastructure dependent on the level of service that is identified through the VMC Operation and Maintenance Plan. It is estimated that annual sweeping and winter maintenance will cost \$12,000-\$15,000 / lane-km. Upon full build-out assuming all cycle track routes receive winter maintenance, the annual cost to maintain the proposed 13.4 km (26.8 lane-km) VMC Cycling Network is estimated to be \$362,000 per year (sweeping and snow removal only).

Broader Regional Impacts/Considerations

York Region staff have been directly involved and consulted throughout the Pedestrian and Bicycle Master Plan update. York Region Transportation Services, York Region Community and Health Services, York Region Police, York Region Transit, York Region School Boards, etc. participate as members of the Stakeholder Advisory Group.

A fine-grid network of separated cycling facilities will support the York Region Transit system providing more convenient and comfortable access to the VMC Bus Terminal, the VivaNext BRT on Highway 7 and other local transit routes servicing the VMC.

Conclusion

With the anticipated development, population density and land use mix, as well as the existing and forthcoming higher order transit services, it is recommended that space be allocated for cycling on all collector and City arterial roads in the VMC, to avoid potential impacts to the boulevard space or vehicular roadway in the future.

It is recommended that cycle tracks be implemented in this space to develop a denser network of separated cycling facilities to make street-level interactions a more comfortable and predictable experience for all users. This recommendation supports Council's priority to invest, renew and manage an improved municipal road network which focuses on the safety and well-being of our citizens travelling by all modes of transportation and cultivates an environmentally sustainable City.

For more information, please contact: Selma Hubjer, Transportation Planning Manager, x8674

Attachments






1. Figure 5.3 Cycling Network, Vaughan Metropolitan Centre Streetscape and Open Space Plan (VMC SOSPP), November 2015
2. Revised Figure 5.3 Cycling Network, Vaughan Metropolitan Centre Streetscape and Open Space Plan (VMC SOSPP), February 2018
3. Table 1 – Summary of VMC Cycling Network Recommendations

Prepared by

Dorothy Kowpak, Active & Sustainable Transportation Project Manager, x8812

ATTACHMENT #1

LEGEND

- CYCLE FACILITIES (on-road)**
-  Cycle Track
 -  Bicycle Lane
 -  Signed Route
- CYCLE FACILITIES (off-road)**
-  Multi-use Pathway (potential)
 -  Long Term Cycling Facility (potential)

Encourage walking or cycling for most daily trips within the VMC

(4.0 VMC Secondary Plan)




-  YRT Bus Terminal
-  TTC Station
-  VIVA NEXT Rapid Transit Stations



Figure 5.3: Cycling Network

ATTACHMENT #2

LEGEND

CYCLE FACILITIES

-  Cycle Track/Seperated Facility
-  Existing Buffered Bicycle Lane
-  Multi-use Pathway
-  Long Term Cycling Facility (potential)

Encourage walking or cycling for most daily trips within the VMC

(4.0 VMC Secondary Plan)




-  YRT Bus Terminal
-  TTC Station
-  VIVA NEXT Rapid Transit Stations



Figure 5.3: Revised Cycling Network (February 2018)

* Refer to Approved Edgeley Pond and Park Detailed Design

Attachment #3

Table 1 - Summary of Proposed VMC Cycling Network Revisions

Segment		Road Classification	Segment Length (km)	2015 SOSP VMC Cycling Network		2018 Proposed VMC Cycling Network Revisions		
Road	From			To	Facility Type ^A	Length (km)	Facility Type ^A	Length (km)
Creditstone Road	Portage Parkway	Interchange Way	Minor Arterial	1.0	Bike Lane	1.0	Cycle Track	1.0
Interchange Way	Jane Street	Creditstone Road	Major Collector	0.6	Bike Lane	0.6	Cycle Track	0.6
Barnes Road	Maplecrete Road	Creditstone Road	Minor Collector	0.3	-	-	Cycle Track	0.3
Doughton Road	Commerce Way	Creditstone Road	Minor Collector	1.3	-	-	Cycle Track	1.3
Exchange Ave/Peelar Road	Commerce Way	Creditstone Road	Minor Collector	1.3	-	-	Cycle Track	1.3
Commerce Way	Applemill Road	Peelar Road	Minor Collector	1.0	-	-	Cycle Track	1.0
Edgeley Boulevard	Interchange Way	Peelar Road	Minor Collector	0.3	-	-	Cycle Track	0.3
Millway Avenue	Interchange Way	Peelar Road	Minor Collector	0.3	-	-	Cycle Track	0.3
Maplecrete Road	Portage Parkway	Peelar Road	Minor Collector	1.2	-	-	Cycle Track	1.2
Creditstone Road	Interchange Way	Peelar Road	Minor Collector	0.2	-	-	Cycle Track	0.2
TOTAL					1.6			7.4