AGENDA

Bike St. John's Advisory Committee

March 28, 2019
3:30 pm
Conference Room "A"
City Hall

ST. JOHN'S

AGENDA
BIKE ST. JOHN'S ADVISORY COMMITTEE
March 28, 2019 – 3:30 pm. – Conference Room A

1. CALL TO ORDER

2. APPROVAL OF THE AGENDA

3. ADOPTION OF THE MINUTES

Adoption of February 21, 2019 meeting minutes

4. BUSINESS ARISING

a. Bike St. John's Master Plan
- Project update
- Review bike network map
- Review draft master plan document
- Project schedule and next steps

Goal moving forward:
Incorporate feedback and finalize Bike St John's Master Plan for approval by council

5. NEW BUSINESS

6. OTHER BUSINESS

a. Next Meeting Date

7. DEFERRED ITEMS

a. Bike Lane Parking

Defer further discussion until Fall 2019

b. Quick Win Project Panning -T'Railway improvements and monitoring

Staff will keep Committee informed on initiative progress

c. Bike Lane Painting

d. Cycling Route Prioritization

7. ADJOURNMENT

MINUTES
Bike St. John's Advisory Committee
February 21, 2019 3:30 pm – Conference Room A

Present Marianne Alacoque, Transportation System Engineer, Chair
Garrett Donaher, Manager - Transportation Engineering
Stephen Hill
Carol Grouchy
Tobias Laengle
Craig Martin
Brian Head, Manager of Parks & Open Spaces
Travis Maher, Community Services Coordinator
Karen Chafe, Supervisor – Office of the City Clerk

Regrets Councillor Dave Lane
David Hood
Erin Dawe
Rob Maloney

ADOPTION OF AGENDA/MINUTES

The agenda for the meeting along with the minutes of the Committee meeting held on December 18, 2018 were adopted as presented.

BUSINESS ARISING

Bike St. John's Master Plan

The Chair updated the Committee on the progress to date. Approximately 250 people attended the in-person engagement sessions and there was also an on-line survey. Overwhelmingly the multi-use trail choice was preferred. Background information was presented during the meeting outlining the detailed results and mapping. A full report in this regard is available with staff. Trace Consultants will consider the feedback received as it continues to refine the draft network and as well, to ascertain what is most feasible to implement.

Opportunities to integrate aspects of the Master Plan throughout areas where road work or development projects may occur will be considered. The Chair elaborated on the following four factors that were used by Trace to ascertain route evaluation:

- Cycling potential (comfort level, i.e. safety, physical and mental exertion);
- Network connectivity;
- Cycling demand – (how does the route configuration accommodate the various population densities it is meant to serve);
- Constructability.

Staff will circulate this information to Committee members for review/consideration and feedback. The following discussions took place:

- specific routing configurations were referenced and whether or not they are adequate and/or need enhancement;
- budgeting for the Master Plan and how it should be phased. There was speculation as to what Council will eventually approve. Participation in public budget consultation processes is strongly recommended.

The Chair indicated that if everything goes as planned, they anticipate forwarding a draft final report to Council by this Spring; however, it is difficult to contemplate the timeline which will depend on Trace's response to the continued consultations.

DEFERRED ITEMS

a. Bike Lane Parking – Defer further discussion until Fall 2019

b. Quick Win Project Planning – T'Railway Improvements and Monitoring

c. Bike Lane Painting

d. Cycling Route Prioritization

OTHER BUSINESS

Next Meeting Date: March 14, 2019 @ 3:30 pm, 4th floor, Conference Room A.

ADJOURNMENT

The meeting adjourned at 4:32 pm.

Marianne Alacoque
Chair

Acknowledgements

City of St. John's Staff:

- Garrett Donaher, Manager, Transportation Engineering
- Anna Bauditz, Transportation Systems Engineer
- Marianne Alacoque, Transportation Systems Engineer
- Greg Keating, Manager of GIS
- Brian Head, Manager, Parks & Open Space
- Travis Maher, Community Services Coordinator

Bike St. John's Advisory Committee:

Erin Dawe

Carol Grouchy

Stephen Hill

David Hood

Tobias Laengle

Craig Martin

Councillor at Large, Dave Lane

Public Participants

With thanks, we acknowledge the more than 1,000 members of the public who shared their experience and guidance through public questionnaire forms, stakeholder meetings, and public open house and drop-in sessions between September 2018 and February 2019.

Consultant Team

Trace Planning and Design

- Jim Scott, Landscape Architect, Planner, Urban Designer
- Carolyn Longaphie, Project Manager, Technical Director
- Emily Phillips, Senior Researcher

Stantec Consulting

- Ryan Martinson, Associate, Sustainable Transportation Specialist
- Warren Martin, Senior Civil Engineer
- John Heseltine, Senior Planner

The Planning Partnership

- David Leinster, Landscape Architect

The City of St. John's commits to

A safe, inclusive, and convenient cycling network that is well-connected, attractive and reflective of the city's unique topography and climate. As part of an integrated mobility network, this is supported by policies and programs that promote a cycling-friendly culture.

About this Document

Chapter 1 provides plan context, an overview of the plan development process, and an exploration of the benefits of a bike network. The following chapters will detail the network and programming required to achieve these benefits.

Chapter 2 establishes the existing platform on which the plan is built, summarizing the project team's approach, lessons learned from past studies, demographic information giving social context, and a review of existing biking facilities.

Chapter 3 provides an overview of the consultation process and the resulting vision.

Chapter 4 presents the St. John's Bike Network.

Chapter 5 details each network component, including different types of bike facilities with cross sections, multimodal hubs, signage and wayfinding, and maintenance.

Chapter 6 details the Action Plan which will guide implementation of this plan, including goals, objectives, catalyst projects, and associated cost estimates.

1.0 A Bike Master Plan for St. John's

The Bike St. John's Master Plan is a resource guiding the collective efforts of partnering government, organizational, business, and resident groups to enhance opportunities for cycling in the City of St. John's. It identifies a network of cycling routes and facilities connecting the City of St. John's. The master plan supports this network with recommendations for:

- catalyst projects;
- phased implementation;
- monitoring;
- maintenance;
- policies; and,
- programming.

The master plan is the product of a community-driven process, during which the consultant team worked closely with City of St. John's staff and the Bike St. John's Advisory Committee. The plan articulates a Vision for the future of biking in St. John's and provides an Action Plan that establishes a roadmap for policy-makers, City staff, and St. John's residents to achieve this vision.

In order to achieve the vision outlined in this master plan, city investments in cycling facilities must be matched by both public and private efforts that support the development of a bike-friendly culture. As a long-term plan it is expected that the network will be implemented over many years as funding becomes available.

1.1 Project Mandate

In 2009, the City of St John's approved its first Cycling Master Plan. The plan recommended over 200 kms of bike routes, with a combination of painted bike lanes, paved shoulders, signed-only bike routes and shared-use paths. Implementation of the 2009 plan stalled with lack of funding and community support.

In 2015, Council requested the creation of the Bike St. John's Task Force to evaluate the state of the 2009 plan and provide guidance to the City of St. John's on next steps. Council adopted the Task Force final report[1] in 2017. An overarching strategic direction was approved with this report:

> *That the City commit to developing safe, comfortable, and convenient cycling infrastructure, policies, and programs.*

1.2 Plan Development Process

Significant public engagement founded the development of this master plan; the input from St. John's residents was essential to understanding the existing network and constraints, developing an overarching vision for the future of biking in St. John's, and refining a draft network. Figure #, below, illustrates the master planning process; a more detailed description is available in Appendix #.

Public engagement was a vital component of the Bike St. John's Master Plan process. Engagement activities were organized into two phases:

[1] Bike St. John's Task Force – Final Report. 25 January 2017. City of St. John's. Accessed 13 March 2019. http://www.bikestjohns.ca/assets/PDF/BSJ_Task_Force-Final_Report.pdf

1. Completed in September/October 2018, roughly 400 people provided feedback on desired routes, desired destinations, and key barriers. This input was used to **develop** a draft network map and vision statement.
2. Completed in January/February 2019, roughly 700 people provided feedback on specific route options and facility types This input was used to **refine** the draft bike network and **confirm** the vision statement.

Over both phases of public engagement the project team was open to feedback on any aspect of the plan to ensure that all opinions presented were heard. Key ideas that were common across all engagement activities are presented in the adjacent Figure #.

1.3 Why improve cycling in St. John's?

The City of St. John's will face many transitions in the coming years: economic pressures; demographic change; and, a desire to transition to a more sustainable and accessible transportation system. By developing an environment where more people in St. John's feel comfortable cycling, the City will also benefit from these many advantages:

- **Social Equity.** Investing in bicycle facilities makes city transportation more equitable. Overall, transportation accounts for 19.9% of household spending on goods and services in Canada.[2] Spending on transportation is disproportionately high among low- and moderate-income families. For these households, cycling presents an affordable option.[3] Cycling benefits people of all ages.
- **Improved Health.** When people become more physically active their mental and physical health improves, increasing productivity, reducing sick days, requiring less medical treatment, and saving healthcare costs. Obesity levels in St. John's (33.2%) are higher than the national average (24.8%)[4]. There is an inverse relationship between obesity and active transportation.[5] Improving active transportation infrastructure impacts obesity outcomes[6] and cycling practice (compared to none) reduces the likelihood of obesity[7].
- **Environmental Responsibility**. In Newfoundland and Labrador, greenhouse gas (GHG) emissions per capita are 4% higher than the Canadian average.[8] In 2016, the use of cars, light trucks, and motorcycles accounted for 17% of the province's GHG emissions (or 48% of transportation sector emissions).[9] Between 2009 and 2016, Newfoundland and Labrador households' transportation emissions increased by 40.9%.[10] Reducing motor vehicle trips helps mitigate climate change through the reduction of

[2]Statistics Canada. "Survey of Household Spending, 2017." Released 12 December 2018. *The Daily.* Accessed 18 March 2019. https://www150.statcan.gc.ca/n1/en/daily-quotidien/181212/dq181212a-eng.pdf?st=trTC8TYz

[3] Litman, T. 2018. "Evaluating Transportation Equity: Guidance For Incorporating Distributional Impacts in Transportation Planning." Victoria Transport Policy Institute. Accessed 12 March 2019. http://www.vtpi.org/equity.pdf

[4] Navaneelan, T. and Janz, T. 2014. "Adjusting the scales: Obesity in the Canadian population after correcting for respondent bias." Accessed 9 March 2019. https://www150.statcan.gc.ca/n1/pub/82-624-x/2014001/article/11922-eng.htm

[5] Bassett, R., Pucher, J. Jr., Buehler, R., Thompson, D. L. 2008. "Walking, Cycling, and Obesity Rates in Europe, North America, and Australia." Journal of Physical Activity & Health, vol. 5, no. 6, pp.795-814.

[6] Mayne, S. L., Auchincloss, A. H., and Michael, Y. L. 2015. Impact of policy and built environment changes on obesity-related outcomes: a systematic review of naturally occurring experiments. World Obesity, vol. 16, issue 5, pp. 362-375. Accessed 9 March 2019. https://onlinelibrary.wiley.com/doi/abs/10.1111/obr.12269

[7] Rasmussen, M. G., Overvad, K., Tjønneland, A., Jensen M. K., Østergaard, L., Grøntved, A. Changes in Cycling and Incidence of Overweight and Obesity among Danish Men and Women. Medicine Science in Sports and Exercise, 50 (7), pp. 1413-1421. Accessed 9 March 2019. https://europepmc.org/abstract/med/29443821

[8] National Energy Board. Date modified: 21 January 2019. "Provincial and Territorial Energy Profiles – Newfoundland and Labrador." Government of Canada Website. Accessed 12 March 2019. https://www.neb-one.gc.ca/nrg/ntgrtd/mrkt/nrgsstmprfls/nl-eng.html?=undefined&wbdisable=true

[9] "Environment and Climate Change Canada Data." Government of Canada website. Accessed 12 March 2019. http://data.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/D-Tables-Canadian-Economic-Sector-Provinces-Territories/?lang=en

[10] Statistics Canada. Released 23 January 2019. "Canadian System of Environmental–Economic Accounts: Provincial and territorial greenhouse gas emissions, 2016." *The Daily.* Accessed 12 March 2019. https://www150.statcan.gc.ca/n1/daily-quotidien/190123/dq190123d-eng.htm

GHG emissions.

- **Safer, Less Stressful Streets.** When more people bike instead of drive, there are fewer cars on the road, reducing traffic and congestion on city streets. Adding protected and separated bike routes reduces pedestrian and cyclist injuries from crashes with cars. When more bike infrastructure is available, people perceive bicycling to be safer.[11] There is also safety in numbers; as more people bike, there are proportionately fewer biking accidents[12] and the rates of collisions with motor vehicles decrease[13].
- **Government Cost Savings.** The government savings associated with more people biking outweigh the costs of investing in bike facilities. For example, a Danish cost-benefit analysis estimated that a $1 investment in biking saved the government $14. From an infrastructure perspective, shifting investment from automotive to active transportation is estimated to save 3¢/km for urban roadway infrastructure and traffic service.[14]
- **Personal Financial Benefit.** Households do not have to spend as much of their budget on transportation when cities invest in active transportation and public transit. For example, the Canadian Automobile Association estimates that driving costs vehicle owners on average $9,000 annually in operating costs including fuel, maintenance, and insurance.[15] Alternatively, the Sierra Club estimates the operating costs of regular cycling to be $308 annually[16] and a year of Metrobus passes costs $936[17].
- **Economic Growth.** Studies show that people who ride bikes for utilitarian reasons are more likely to live in dense urban areas, be repeat customers, and visit a particular store if bike lanes reach that destination.[18] Retail sales have increased for businesses located by bike lanes, compared to similar streets without.[19] Cities with strong bike networks can also become bike tourism destinations, further supporting local economy.
- **Recreational Benefit.** Improving a city's bike network increases the amount of bike routes comfortable not just for commuting and transportation, but also for leisure and

[11] Branion-Calles, M. , Nelson, T., Fuller, D.,Gauvin, L., \Winters, M. 2018. "Associations between individual characteristics, availability of bicycle infrastructure, and city-wide safety perceptions of bicycling: A cross-sectional survey of bicyclists in 6 Canadian and U.S. cities." Transportation Research Part A: Policy and Practice. Accessed 9 March 2019. https://www.sciencedirect.com/science/article/pii/S0965856417314933

[12] Elvik, R. and Bjørnskau, Torkel. 2015. "Safety-in-numbers: A systematic review and meta-analysis of evidence." Safety Science. Accessed 9 March 2019. https://www.researchgate.net/publication/282563334_Safety-in-numbers_A_systematic_review_and_meta-analysis_of_evidence

[13] CIty of Vancouver. January 22 2015. "Cycling Safety Study." Accessed 9 March 2019. https://vancouver.ca/files/cov/cycling-safety-study-final-report.pdf

[14] Litman, Todd. 2010. "Quantifying the Benefits of Nonmotorized Transportation For Achieving Mobility Management Objectives." Victoria Transportation Policy Institute, pp. 11. Accessed 9 March 2019. https://www.researchgate.net/publication/237794465_Quantifying_the_Benefits_of_Nonmotorized_Transportation_For_Achieving_Mobility_Management_Objectives

[15] Canadian Press, The. "Cutting the costs of vehicle ownership by buying and driving less." CBC News. Last Updated: 31 August 2017. Accessed 9 March 2019. https://www.cbc.ca/news/business/car-ownership-costs-1.4269992

[16] Sierra Club. "Pedaling to Prosperity". Accessed 9 March 2019. http://vault.sierraclub.org/pressroom/downloads/BikeMonth_Factsheet_0512.pdf

[17] Metrobus. "Fares, Passes & Sales Outlets." Accessed 9 March 2019. https://www.metrobus.com/html-default/fares.asp

[18] Arancibia, D. 2013 *Cyclists, Bike Lanes, and On-Street Parking: Economic Impacts.* Accessed 9 March 2019. http://po.st/r767Tl

[19] Trottenberg, Polly. September 2014. "Protected Bike Lanes in NYC". New York City Department of Transportation. Accessed 13 February 2019. http://www.nyc.gov/html/dot/downloads/pdf/2014-09-03-bicycle-path-data-analysis.pdf

recreation.

- **Time-Saving.** Riding a bike is faster and more efficient than walking, can be faster than driving during times of high traffic congestion, and is often competitive with public transit. In cities with more bike infrastructure, cycling is often the fastest and most convenient option.
- **Vibrant streets.** Vibrant streets are livable, attractive, safe, and welcoming to all people, whether walking, rolling, biking, or driving. Bicycle infrastructure enhance walkable and vibrant streets. They are supportive of dynamic economic and social environments, are used by the entire community, create a strong sense of place, and foster community pride.

1.4 Understanding local needs

Similar to many other North American cities, more people in St. John's are moving to outer, suburban neighbourhoods while the population closer to the city centre shrinks. Figure # in Appendix # illustrates this redistribution of population across St. John's. Likewise, areas with higher total household incomes and higher percentages of the city's youth population are more often located further from the city centre. The spread of neighbourhoods across the 166 square kilometres of land area in St. John's means that important destinations where residents live, work, play, and learn are distributed throughout the city. More people are traveling farther, and without a safe, convenient, and comfortable biking network they are doing so by car.

The Bike St. John's Master Plan must reflect the diverse requirements of and opportunities for bicycling that appeal to all age groups. The network should be comfortable for all ages and abilities. It strives to connect the varied neighbourhoods that make up St. John's, supporting a more equitable transportation system that connects neighbourhoods with varying resources, age composition, and size.

2.0 Vision and Goals

The vision for cycling in St. John's was developed from the visions presented in the 2009 Cycling Master Plan and the Bike St. John's Task Force report. Refined based on public input, the vision was endorsed by the Bike St. John's Advisory Committee.

People increasingly choose to ride bicycles in St. John's. The City of St John's commits to developing a safe, inclusive, and convenient cycling network that is well-connected, attractive and reflective of the city's unique topography and climate. As part of an integrated mobility network, this is supported by policies and programs that promote a cycling-friendly culture.

The overarching purpose of all this work is to increase ridership.

The vision aligns with the City's Strategic Plan 2019-2022 and is supported by best practice and public engagement.

[The following list should be rewritten to be in paragraph form, as an explanation of the vision.]
SAFETY IS PARAMOUNT: When cycling feels safe, more people choose to ride. With more people riding bikes, cycling is safer for everyone.
CYCLING-FRIENDLY CULTURE: People driving, biking, taking transit, walking or rolling respect and care about each other.
CONVENIENT, ATTRACTIVE & INCLUSIVE: Riding a bike is an easy and attractive way to get around the city for people of all ages and abilities.
INTEGRATED: Bike routes are connected with other ways to travel, such as streets, trails, and transit stops. Destinations are integrated into the network by providing appropriate end-of-trip facilities, such as bike parking.
WELL-CONNECTED: People can bike to regional, city-wide, and neighbourhood destinations on seamless, intuitive bike routes that are easy to navigate.

The following **3-4 goals** help to interpret how the Vision is translated into the actions, projects, performance measures, and project prioritization. They organize the plan's recommendations, and are reflected in the structure of the master plan document.

- ★ INFRASTRUCTURE: Construct the infrastructure required to enable increased cycling.
- ★ CULTURE/PROGRAMS: Develop a culture that embraces cycling as a recreational activity and purposeful model of travel.
- ★ POLICY: Adopt policies and a legal framework that support a vibrant cycling environment.
- ★ EVALUATION: MONITORING:

Performance measures or Targets (specific and measurable)

- increased ridership: for example 10% of people will journey-to-work by bicycle?
    - Census data
- a balance of genders will bicycle (50% women is simpler but less inclusive?)
    - Census or other municipal survey
- ## number of people (youth?) will participate in a bicycle program annually

- zero bicycle fatalities
- decrease crashes (number and severity) every year
- Full bike network build out, ## km

3.0 Infrastructure

3.1 Cycling Network

The Bike St. John's Cycling Network recommended in this master plan (Figure #) connects neighbours, neighbourhoods, and essential recreational, commercial and civic destinations throughout the city. This network excludes a few existing routes from further inclusion. Network routes were selected based on the following criteria:

- Safety
- Convenience and Attractiveness
- Connectivity and Integration
- Route density
- Equity

The following subsections outline a number of important considerations that were taken into account during the development of the recommended cycling network.

3.1.1 The people who ride bicycles

[add content here about who we're designing the network for.

- Focus on all ages and abilities.
- Routes and facilities should be appropriate for people riding tricycles, cargo bikes, recumbant bikes, adapted bikes for disabilities, etc. They should be comfortable for people pulling trailers, carrying children and groceries, etc.
- Talk about gender and cycling. About how a balance of genders is an indicator of a good cycling network. Cite research supporting this concept if possible.
- To increase ridership, we are building a network that will appeal to as many people as possible.
- Something about social equity and inclusion]

3.1.2 Emphasize off-street routes

Throughout the public engagement process, people identified a strong preference for off-street bike routes through natural areas. This local preference is reinforced by a growing body of research about cycling motivators and deterrents. A 2008 study[20] by the Cycling in Cities program at the University of British Columbia shows the top factor motivating people to ride a bicycle is access to routes that are physically separated from motor vehicle traffic noise and pollution, that have beautiful scenery, and that are flat.

3.1.3 Upgrade Existing Trails

The Grand Concourse trail system was created to develop nature-based pedestrian corridors; its system has expanded to include sidewalks forming a walking network 125 kilometres long. By upgrading carefully selected Grand Concourse trails to shared-use paths, a wide variety of users can safely and comfortably share the trails.

3.1.4 Vibrant, People-Centered Spaces

Simply put, people like to meet, greet, and talk. These social connections are essential to civic identity and character. Trails and streets enhanced for active and multimodal movement are also naturally social spaces, contributing to a more vibrant community. Therefore, bike network routes and facilities should be designed to

[20] Winters, M., Davidson, G., Kao, D., Teschke, K. 2011. "Motivators and deterrents of bicycling: comparing influences on decisions to ride." Transportation, 38 (1), pp 153 - 168. Accessed 25 March 2019 https://link.springer.com/article/10.1007/s11116-010-9284-y

improve the areas where they are located, contributing to more welcoming, walkable, people-centered spaces.

Similar to many other old cities, the street network in old St. John's evolved prior to the dominance of motor vehicles. Where off-street trails are not feasible, the development of on-street routes should be approached as an opportunity to enhance streetscapes for inclusive and accessible human-powered multimodal transportation.

3.1.5 Downtown

Routes through downtown are not identified as part of this network plan. Downtown is an important work, leisure and tourism destination, with high residential density. It has high cycling potential. More work is needed to recommend routes through downtown where steep grades, narrow streets, and on-street parking are significant constraints.

> **Action:** Downtown bike routes to be identified in a future study.

3.1.6 Community Acceptance

[talk about limiting impacts to on-street parking here]

- During public engagement, we heard that it was important to limit impacts to on-street parking.
- Community pushback to implementation of 2009 plan. Impacted residents should be aware and engaged prior to the construction of new infrastructure that affects them.

3.1.7 Network Design

The recommended **full cycling network** is shown in Figure #. This represents a set of comfortable, connected, and convenient bike routes that serve the vision of this plan.

Within this full network a subset **backbone network** is identified. The backbone network is an important tool for implementation. It is strategic to prioritize a core citywide network of comfortable and attractive bike routes. This ensures basic connectivity across the city. Figure # shows the routes of the backbone network. It includes shared-use paths along natural corridors with on-street links where trails are not possible. The backbone network supports commuter needs, along with recreational and social experiences.

The full network is supplemented by an **extended cycling network** shown in Appendix #. The additional links in this extended network were identified as potential routes during the plan development process. While these links are not included in full cycling network recommended by this plan, they represent cyclist desire lines and routes with good potential. People cycling are unlikely to detour more than about 400 meters to find a route with bicycle facilities. (insert citation) Designated bike routes spaced a minimum of every 400 meters for urban areas. To achieve this minimum density, routes on the extended network map should should be considered for implementation as opportunities arise through construction, development, or other projects.

3.1.8 Limiting Impacts to On-Street Parking

[this seems like more of an implementation piece - should likely be

moved]

As part of implementing the 2009 Cycling Master Plan bicycle facilities, on July 26, 2010 the City established parking restrictions on streets with bicycle lanes. On September 28, 2015, Council rescinded this decision in relation to winter on-street parking:

> *That Council rescind its decision of July 26, 2010 with respect to the approval of the Cycling Master Plan insofar as to remove all parking restrictions imposed on streets with bicycle lanes during the winter months from the period November 1 - March 31 of each year, and that this be implemented this coming November 1, 2015.*

This master plan proposes a new network of routes, replacing the 2009 Cycling Master Plan and its associated on-street parking restrictions. In some cases, routes recommended in the 2009 Cycling Master Plan are not carried over. Accordingly, the removal of certain former facilities, not incorporated in this master plan's network, means the permanent removal of associated parking restrictions on those roadways.

There are some existing bike lanes that are no longer recommended in this plan. In these cases, an alternate bike route will be provided and the existing bike lanes will be removed.

Suggest where case-by-case needs to be considered.

Recommendations on parking restrictions

3.2 Bike Facilities

~~The facilities plan in Figure # illustrates the network by facility type. The facility types shown are based on best practice for bike facility design, what was heard through public engagement, and corridor capacity to host the proposed facility. Shown on this plan are three primary facility types:~~

- ~~Shared-use path following natural corridor~~
- ~~Shared-use path following street corridor~~
- ~~On-street route (specific facility to be determined)~~

~~The facility types show in Figure # are preliminary and may change as specific projects are examined in more detail for implementation.~~

Selection of an appropriate facility type relies heavily on the safety the facility affords relative to the street on which it is placed. Speed is a critical consideration in this process. Figure # [below] shows that the severity of a collision between a motor vehicle and an exposed person increases rapidly with speed[21].

3.2.1 Intersections

Collisions and near misses are most likely to occur at "conflict points" such as intersections or driveways. To prevent collisions at conflict points, it is generally best to separate motor vehicles and bicycles. Second best is to lower speeds to reduce severity of potential conflicts. It is important to clearly mark where each

[21] World Health Organization. 2004. "Road Safety - Speed." World Report on Road Traffic Injury Prevention. Accessed 13 March 2019. https://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/speed_en.pdf

different user is expected to be, leading to predictable patterns of movement.

Designing intersections for bicycle safety and comfort is critical. When implementing new bike routes, all included intersections must be evaluated and potentially upgraded for ease of use by bicycle riders of all ages and abilities.

Elephants' Feet / Crossride

[This is duplicated in the Policy section. A similar update to legislation may be needed if/when we install bicycle signals.]
Elephants' Feet markings are used to demarcate crossrides where cyclists are able to cross an intersection without dismounting. They are located at intersections with a shared-use path or separated bicycle facility. Markings are painted white squares, placed either outside the white lines of a pedestrian crosswalk, or on one side of the pedestrian crossing. In the case of mixed pedestrian and cyclist crossrides, volume is low and both users share the crossing. In the latter case, pedestrians and cyclists have their own crossing space. When crossing, cyclists should yield to pedestrians, slow to a walking speed, and cross when it is safe to do so.

Action: The City will adopt a By-Law outlining the proper use of elephants' feet markings.

Action: Province of Newfoundland and Labrador to amend the Highway Traffic Act to include a legal definition of Elephants' feet markings, their design, and proper use.

3.2.2 Natural Corridor Bike Routes

Shared-use Paths

Facility Description

- Shared-use paths through a natural corridor allow two-way travel for people who bike, walk, stroll and roll.
- These are analogous to the "Municipal Paths" in the Open Space Master Plan.
- Minimum 3.0 metre width
- Paved surface [add discussion about paved vs gravel]

Appropriate Use

- Consider impact on natural environment.
- Consider separate pedestrian and bike trails when greater than 100 persons per hour (for typical 3m shared-use path).

Other Considerations

- Upgrading trails to widths suitable for shared-use with asphalt surfacing makes them more accessible for all active transportation users and people with mobility challenges.
- High level of comfort for people of all ages and abilities
    - Natural surroundings and beautiful scenery motivate people to take advantage of the facility
- Cons

- Potential collisions between trail users (this requires education about users' responsibility for maintaining each others' safety, see Section #.# for more on education)
- Off-street corridors can be less direct to desired destinations and/or have fewer access points.

3.2.3 Street Corridor Bike Routes

Bike routes along street corridors have higher potential directness/proximity to destinations than roues through parks and natural corridors. However, they also have more exposure to motor vehicle noise and pollution.

Shared-use Paths (Offset from Traffic)

Facility Description

- Shared-use paths offset from traffic follow the street corridor but are separated from vehicle traffic by a boulevard. They permit two-way travel for people who bike, walk, stroll and roll.
- Minimum 3.0 metre path width
- Paved surface

Appropriate Use

- Not dependant on adjacent traffic speed or volumes
- Fewer and/or lower volume driveways and intersections
- Consider separate pedestrian and bike trails when greater than 100 persons per hour (for typical 3m shared-use path).

Other considerations

- Upgrading trails to paved surfaces and widths suitable for shared-use makes them more accessible for all active transportation users and people with mobility challenges.
- High comfort for bike riders of all confidence levels
- Potential collisions between trail users (this requires education about users' responsibility for maintaining each others' safety, see Section #.# for more on education)

Protected Bike Lanes

Facility Description

- A protected bike lane is located within the street corridor and is physically separated from vehicle traffic (e.g., elevated with rolled curb, separated by planter boxes or bollards).

Appropriate Use

- Low to Medium Traffic Speeds (comfort is greater at lower speeds, but can still be appropriate for all ages and abilities on roadways with speeds greater than 25 km/h)
- Medium to High Traffic Volumes (comfort is greater at lower volumes, but can be still be appropriate for

all ages and abilities on roadways with greater than 6,000 vehicles per day)[22]

Pros and Cons

- Pros
  - High comfort for confident bike riders
  - People riding bikes are physically separated from vehicles.
  - Location along street corridors has higher potential directness/proximity to destinations.
- Cons
  - Less comfortable for less confident riders.
  - People riding bikes are in relatively close proximity to vehicles.

Traffic-Calmed Bike Boulevards

Facility Description

- On traffic-calmed bike boulevards, people riding bikes and driving motor vehicles share the street. These streets typically have low traffic speeds and volumes, and no centreline. People riding bikes are prioritized on these routes through traffic calming and clear signage.

Appropriate Use

- Traffic calming measures are usually more restrictive than a typical street with traffic calming.
- Lower traffic speeds (30 km/h or less is usually comfortable for all ages and abilities)
- Lower traffic volumes (typically less than 2500 vehicle per day; less than 1000 is usually comfortable for all ages and abilities)

Pros and Cons

- Pros
  - High comfort for confident bike riders
- Cons
  - Only moderate comfort for less confident riders.
  - Vehicles and people riding bikes share the same physical space.

Painted Bike Lanes (Buffered and Unbuffered)

Facility Description

- Painted bike lanes are located within the street corridor and are designated for the exclusive use of cyclists. They are typically indicated by a painted solid line and bicycle symbol, and may be further buffered by a painted buffer strip between the bike lane and vehicle lane and / or on-street parking lane.

22 https://nacto.org/publication/urban-bikeway-design-guide/designing-ages-abilities-new/choosing-ages-abilities-bicycle-facility/

Appropriate Use

- Conventional Bike Lane:
  - Lower traffic speeds (25 km/h or less is usually comfortable for all ages and abilities)
  - Lower traffic volumes (typically 1,500 – 3,000 vehicles per day)
- Buffered Bike Lane:
  - Lower traffic speeds (25 km/h or less is usually comfortable for all ages and abilities)
  - Low to medium traffic volumes (typically 1,500 – 6,000 vehicles per day)

Pros and Cons

- Pros
  - High comfort for confident bike riders
  - Visible separation between vehicles and bike riders
- Cons
  - Only moderate comfort for less confident riders
  - Vehicles and people riding bikes share the same corridor

Advisory Bike Lanes

Facility Description

- Advisory bike lanes are located only within street corridors with low traffic speeds and volumes that are too narrow to fit two-way vehicle traffic and traditional bike lanes. Lanes are typically indicated by a painted dashed line and bike symbol, communicating that they are not for exclusive use of cyclists. People driving must yield to people biking, and should only drive within advisory bike lane bounds to avoid oncoming traffic.

Appropriate Use

- Low traffic speeds
- Low traffic volumes
- Narrow roadways

Pros and Cons

- Pros
  - Comfortable for confident bike riders
- Cons
  - Only moderate comfort for less confident riders
  - Vehicles and people riding bikes share the same corridor.

Bicycle-Accessible Paved Shoulders

Facility Description

- Although not identified on the Bike Network map, these are an important facility type, particularly for the Extended Network connecting to areas outside of city boundaries (Appendix #). Bicycle accessible paved shoulders are located outside of the vehicle travel lane.

Appropriate Use

- Streets with a rural cross-section (typically ditched drainage and no sidewalks)

Pros and Cons

- Pros
  - Increases operating width for people who drive and bike
  - Improves conditions for all roadway users, especially in rural areas
- Cons
  - Only moderate comfort for confident riders

3.2.4 End of Trip Facilities

Multimodal Hubs

Multimodal hubs are shown on Figure # at walkable destinations such as the MUN campus and around the edges of downtown. Connected to bike routes and bus stops, they provide convenient options for people to access walkable destinations. For example, people are invited to cycle to a multimodal hub at the edge of downtown, lock-up to secure bike parking and comfortably continue their trip on foot or by bus. The entire Metrobus fleet is equipped with bike racks, so people can take their bikes with them when they ride the bus.

Multimodal hubs are meant to serve the downtown area where tight streets, motor vehicle activity, and steep hills are significant barriers to comfortable cycling. This concept still allows confident cyclists to ride their bikes downtown.

Hubs include highly visible structures with secure long-term bike parking, weather-protection, seating, trash receptacles, as well as transit and cycling network information. Their design should focus on convenience and security, with increased visibility to draw attention to both cycling and transit.

Bicycle Parking

This section introduces different types of bicycle parking. Additional guidance on determining placement of, sites for, specifications of, and best practice associated with bicycle parking facilities can be found in the Association of Pedestrian & Bicycle Professionals' *Bicycle Parking Guidelines, 2nd Edition (2010).*[23] As it relates to the network, bicycle parking should be considered in terms of short-term and long-term parking.

Short Term

Short-term parking is appropriate in areas where people stop to run errands, have a meal, or recreate. Wherever possible, they should be easily visible from the bike network and by pedestrians passing by. Short term bicycle parking should primarily be **easy-to-use** and in **close proximity to destinations**, such as in front of building entrances. Examples of short term bicycle parking include:

[23] https://www.apbp.org/page/Bike_Parking

Bike Racks

Bike racks are ideally situated within 50 feet or less from the entrance of the destination they serve. They should be sturdy, anchored to the ground, and their design should be self explanatory and support the bike frame in at least two places. Bike racks should be visible to the public, and are ideally visible from the destination they serve.

In 2018 the City of St. John's hosted a bike rack design competition that resulted in the selection of three bike rack designs.

Bike Corrals

Bike corrals offer higher-capacity (typically 8 to 12 bicycles), short-term bicycle parking. They may be located on-street, adjacent to the curb, in a location not suitable for vehicle parking. They are suitable for locations with limited sidewalk space for bike racks, but with strong bicycle parking demand.

Sheltered bike parking

Sheltered bike parking should be installed wherever possible because of St. John's frequent precipitation. This type of short-term bike parking better facilitates daily and year-round bicycle use.

Long Term

Long-term bike parking is more secure and better protects against weather than short-term facilities. It is suitable to require long-term bicycle parking at multimodal hubs, places of employment, residences, schools and post-secondary institutions. These types of facilities serve the needs of commuters and residents parking at routine destinations for a period of several hours or longer. Facilities may be open to the public or have limited access, and a portion of racks should accommodate longer bicycle types and trailers. Long-term bicycle parking facilities include:

Bike Lockers

Bike lockers are large plastic or metal boxes designed to secure bicycles and related accessories. They are typically situated in groups of two or four. Bike lockers protect bicycles from weather; however, they may be placed outdoors and their access can be exposed to the elements. They should be visible and located in well-lit areas. The large plastic or metal surfaces of bike lockers present a surface for branding.

Bike Cages

Bicycle cages are made of metal mesh or perforated metal sheets and may be sized for individual bike storage or higher capacity bike storage. Higher-capacity, mesh cages offer shelter and security for bike racks/corrals located within. They may be located outdoors, indoors, or in parking garages, and should have good visibility. Smaller bicycle cages are more secure, as fewer people have access.

Bike Rooms

Bike rooms offer secure, high capacity bicycle and bicycle accessory storage, typically in an access controlled room. They may also include facilities for bicycle maintenance (e.g., pumps,

repair stations, wash stations). Rooms should be of a size adequate to fit bikes without crowding, while maintaining riders' ability to maneuver their bike and get in/out of the room without frustration. In order to maximize bicycle parking capacity, horizontal racks, double racks, or vertical racks may be installed. Rack types should be chosen to ensure parking remains accessible to people of all ages and abilities, as well as a variety of bike sizes and trailers. Bike rooms should be located within buildings so that they have direct access outside and doors should be at least 75 cm wide. They should be well-lit and visible, within sight of building entrances, security, or an elevator.

Action: Install short-term bike parking in locations where there is municipal interest and where they can be integrated with ongoing street or sidewalk improvements.

Action: Implement a request-a-rack program (online form or 311).

Action: Monitor installation of bike racks against annual target.

Action: Create a program where people can buy "official" racks. / bicycle parking installation program to which businesses and property owners can apply for City installation of outdoor bicycle racks and storage facilities

Action: Add minimum bicycle parking requirements in development regulations. Bicycle parking facility types should be evaluated and required according to development characteristics (e.g., size of buildings, land uses).

Action: Include bicycle parking in design standards (must support bike frame in at least two places, must be properly anchored to the ground, etc.). OR reference APBP best practice guide for bike rack design

Action: Develop a strategy to encourage private installations of new bicycle parking in developed areas. For example, a small annual subsidy to reduce cost and encourage installs

Action: The City of St John's should lead by example and provide short and long-term bike parking for its visitors and employees.

Showers and Change Facilities

Large, non-residential developments that offer facilities for long-term bike parking should offer men's and women's shower and change facilities. These facilities are meant for people who ride their bicycles to work, learn, or other purposes that may require them to 'freshen-up' post-ride, and should be located near long-term secure bike parking facilities, or be incorporated with other related on-site facilities like a fitness centre. They should include showers, toilets, sinks, grooming areas, and personal lockers, and be an adequate size to meet needs at peak travel times. Requirements for change rooms and shower facilities may be tied to the number of long-term bicycle parking spaces and/or the size of a building, and are included in development standards or building codes.

Action: the City will encourage the inclusion of showers and changing facilities at all locations where long-term bicycle parking is provided.

Bike Maintenance and Repair Facilities

Municipalities and private developments may install public, free-to-use manual bike pumps, bike repair stations, or wash and fill stations in visible, accessible, high bicycle traffic, and central locations. They are made to be theft resistant; however, regular monitoring is required.

Action: the City will encourage the installation of bike maintenance and repair facilities at central, high bicycle traffic locations such as outside libraries, civic destinations (e.g., City Hall), community centres, parks, grocery stores, parking garages, and multi-modal hubs.

3.2.5 Transit Facilities

Bus Bicycle Racks

Metrobus has bike racks on every bus. This is great and should be continued. However they can only carry 2 bikes.

Action: Metrobus should allow childrens' bikes or bikes with wheel diameter less than 20 inches aboard the bus.

Action: Encourage incorporation of bicycle racks and similar bicycle supportive facilities in multimodal nodes where bicycle users can interface with transit and other active transportation modes.

Action: As the cycling network matures and cycling demand grows, consider expansion of timeframe for bus bike racks from May 1st to November 30th (present) to year-round.

3.3 Wayfinding and Communication

3.3.1 Themed Wayfinding Signage

As the network is developed, themed wayfinding signs should be incorporated to provide clear information to users about routes, travel times, and destinations. The design and theme of these signs should be consistent with an overall City wayfinding program, mapping, and promotional materials.

This wayfinding signage system should be expanded and updated as the network grows.

Recommendations on content for signs:

- Trail names?
- Major destinations w distance? w time?
- Walking info too?
- What elements are most prominent? Relative size?
- BSJ theme customization symbol?

will include gateway, directional, orientation and reassurance signage; to be applied to shared-use path systems.

3.3.2 Regulatory Signage

Standard Transportation Association of Canada signage should be applied where appropriate.

3.3.3 Maps

- keep GIS up-to-date and available for google maps/mapcentre
- printed maps updated regularly (every # years)

Action: Remove signs on former 2009 Cycling Plan routes not incorporated in the 2019 network.

3.4 Maintenance

Ongoing maintenance is critical to providing accessible and reliable bike routes. A route is only as safe and comfortable as its weakest link. People riding bicycles are particularly sensitive to maintenance conditions because of their higher physical exertion and exposure to noise, dirt and fumes. This applies to maintaining bike routes and amenities, and accommodating temporary disruptions.

This master plan recommends that the City maintain all network facilities year-round, to maximize network safety, comfort, and dependability. Regular inspection and maintenance is needed during all seasons. As part of master plan implementation, the City will create strategies for regular network upkeep and repair, seasonal maintenance, and temporary conditions in accordance with the following recommendations:

The City of St. John's administration responsible for public works, parks, recreation and transportation shall collaborate to ensure the integrated maintenance of municipal bicycle facilities for safe bicycling across the city.

3.4.1 Regular Upkeep and Repair

Natural Corridors

The City of St. John's Parks and Open Space Master plan describes trail maintenance procedures to which shared-use paths within natural or open space corridors will be maintained.

- Add paved surface maintenance

Street Corridors

Pavement Repair

- Smooth pavement surfaces on designated bike routes must be maintained to a standard appropriate for riders of all ages and abilities. (e.g., pothole repair) Bicycle riders are particularly susceptible to bumps, potholes and other pavement disturbances.
- Abrupt roadway edges/ruts are to be avoided (e.g., pavement overlays, curb/gutter transitions)

Stormwater Management

- Special care must be given to manage pooling in bike routes. As a person riding a bike is much more

vulnerable to splashing and pooling of water in the roadway that a motor vehicle driver.

- The design of standard drainage grates should be improved with side inlet / hybrid options. Needs to be vetted for hydraulic capacity so recommend that engineering division address this. Then vet recommendation through scott. See spec drawings 10-223-15 (page 436/513) through 10-223-18 (page 439/513) for current catch basins. http://www.stjohns.ca/publications/construction-specifications-book

Pavement markings

- incorporate into painting priority policy [refer to policy section]

Multimodal Hubs and End of Trip Facilities

- Regular inspection of bike parking for damage.
- Removal of abandoned bicycles, include removal notice tag (weather proof: vinyl bracelet style similar to those City buys for pool entry)
- Potential for seasonal installation & removal of bike corrals

Signage

- Regular inspection of signage for damage, vandalism, and fading.

Brian: on-street is part of the inventory work we do in traffic group. Should off-street trails in this plan be incorporated in this or added to parks work as current park signs are?

Seasonal Maintenance

Spring

- Street cleaning operations should take into account barriers related to bike facility infrastructure.

Summer

- Annual inspection and trimming of vegetation alongside bike facilities.

Winter

Current Practice

No targeted clearing of bike routes. Current snow removal practices prioritize arterials and…
http://www.stjohns.ca/policies.nsf/nwPolicyNum/07-02-01
Cross ref to section 5.2.1 where policy change is recommended

Long Term Goal

Talk about how this can be added to the cycling system as The system matures.

Action: Develop a citywide prioritized map for clearing bicycle and pedestrian routes after snow events, including multimodal hubs.

- Clearing of special bike facility infrastructure needs to be considered in planning winter operations and purchasing new equipment.
- Locations of bike supportive infrastructure (such as bike racks) need to consider maintenance of adjacent space and potential for clearing. Any potential conflicts with regular winter maintenance equipment need to be flagged through snow clearing season with marker visible to operators
- Prioritize snow clearing of multimodal hubs
- Develop an anti-icing strategy.
- Sweeping of infrastructure in seasons outside of winter, taking into consideration varying seasonal needs (e.g., fallen leaves, storm debris).

3.4.2 Temporary Conditions

Bicycle accommodation for route disruption/closure or detour

People riding bicycles are particularly susceptible to disruptions in their normal travel routes because of their slower speeds and exposure to noise, dirt and fumes. A bike route is only as safe and comfortable as its weakest link. When a bike route suddenly disappears without advanced notice/signage or planned detour, it can have severe impacts on a riders comfort and safety. Consider the sparse density of the full bike network relative to the density of streets or sidewalks. This means an unaccommodated disruption can leave a less than confident cyclist in a stressful situation without alternative route options.

- advance warning signs about
- Consistent signage warning of closures, disruptions, or safety conditions (construction ahead, metal plates, gravel patch ahead, etc.).
- Adequate warning of dates of closure and detour route (e.g., in the field, City communications)
- Provision of reasonably direct detour route.

Action: Update the City of St John's Traffic Control Manual to include bike routes in Traffic Control Plans (Traffic),

Action: street excavation permits (PW) both need to account for this. It can be a recommendation of the report which comes into force with council adoption.

3.5 Legal and Design Requirements

This master plan provides a foundation for building cycling facilities in the City of St. John's. In addition to the contents of this master plan, some of the guidelines, specifications, and laws that should be considered to ensure safety and feasibility include:

- Transportation Association of Canada's Bikeway Traffic Control Guidelines for Canada
- Canadian Guide to Traffic Calming
- Newfoundland and Labrador Highway Traffic Act, provincial Regulations, and
- St. John's Specifications Book will guide implementation of all technical components identified in this plan.

Appendix # includes construction specifications for common groups of facility types, and will be incorporated into a future update of the St. John's Specifications Book.

4.0 Culture

The City should work closely with the following community partners in order to promote a cycling friendly and capable culture:

- MUN Bike Share
- MUN Beap Lab
- Ordinary Spokes
- Happy City St. John's
- Bicycle Newfoundland and Labrador
- The Grand Concourse Authority
- Bike shops

In collaborating with partners on the following programs, the City aims to achieve a culture in which St. John's is a welcoming place to ride a bike. The League of American Bicyclists and Share the Road[24] use five categories commonly referred to as the "5 E's" to measure bicycle friendliness.[25]

- Engineering: Creating safe and convenient places to ride and park
- Education: Giving people of all ages and abilities the skills and confidence to ride
- Encouragement: Creating a strong bike culture that welcomes and celebrates bicycling
- Enforcement: Ensuring safe roads for all users
- Evaluation & Planning: Planning for bicycling as a safe and viable transportation option

The Chapter 3 is about "Engineering" and Chapter 6 and Chapter 7 is about "Evaluation and Planning." This chapter outlines programs about Encouragement, Education and Enforcement.

This chapter outlines programming to be implemented through partnerships in order to build a bicycle-friendly culture. Initiatives include events, bicycle programs, educational materials, enforcement, partnerships, and campaigns.

4.1 Bicycle Programs

4.1.1 Overall

Vision Zero

Vision Zero is a traffic safety strategy with a long term goal of achieving zero motor vehicle collisions, fatalities, and serious injuries.

Action: Council adopt Vision Zero (as recommended in the Envision plan?) with dedicated funding for traffic safety.

Bike St John's Advisory Committee

The Bike St John's Advisory Committee (2018-ongoing) and the Bike St John's Task Force (2016-2017) have provided important perspectives and guidance to Council about cycling issues. This plan recommends maintaining the permanent establishment of the Bike St. John's Advisory Committee, using its present mandate (fol), to support and ensure long term implementation of the Bike St. John's Master Plan:

> *The Bike St. John's Advisory Committee provides information and advice to the Committee of the Whole on*

[24] https://www.sharetheroad.ca/bicycle-friendly-communities-p138264
[25] https://bikeleague.org/content/5-es

matters that affect the City, as referred to it by committees of council, or as initiated by the Committee or the community, concerning cycling issues and the development of a safe, comfortable, and convenient City wide cycling network.[26]

4.1.2 Events

Events would be run by community services…
Capacity requirements

Bike Month

To kick off the cycling season, cycling advocacy groups in many cities across Canada celebrate Bike Month. During Bike Month, residents are encouraged to switch their main mode of commuting to a bike and organizations host programs and events such as Bike to Work Day group commutes, Bike to School Week, cycling tours, outfitter/shop demo days, and neighbourhood-specific bike rides and festivals.

> **Action:** The City should work with partners to coordinate its own Bike Month during the first full month of the 'summer' riding season (typically held in May or June).

BikeFest

BikeFest 2018 was a one-day street festival to celebrate and promote cycling and active transportation in the City on Sunday September 16, 2018. The section of Water Street between Beck's and Bishop's Cove was closed to vehicle traffic to host the event that included educational and fun activities, entertainment, and a public engagement tent for the Bike St. John's Master Plan. It was a huge success, with over 1000 people participating despite poor weather.This success was due in large part to the support received from Happy City St. John's, volunteer cycling organizations, local bike shops, and area businesses.

> **Action:** Plan and support an annual active transportation event, similar to BikeFest, in partnership with community organizations.

Open Streets / Ciclovia

An Open Street or Ciclovia event closes a street to cars and opens it up for people to experience the space in a whole new way. Different from a festival or marathon, there are no parades, sidewalk sales or finish likes. It's an opportunity celebrate physical activity and healthy recreation while encouraging people to consider the possibilities of a street. New York, Ottawa and Toronto are a few examples of city's that host these events regularly throughout the summer months

This campaign can align with other annual biking events like BikeFest, the first of which was organized in St. John's in September 2018.

> **Action:** Commit funding to annual events, similar to the events listed above that support community partners with the goal of promoting and celebrating cycling and active transportation.

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26 http://www.stjohns.ca/sites/default/files/CommitteeTermsReference/BSJ%20Advisory%20Committee%20TOR-FINAL_0.pdf

Safe Routes to School

Safe Routes to School programs are localized initiatives to improve conditions for walking and biking to school. Schools or local community members collaborate with city agencies to identify and tackle challenges such as missing crosswalks, inadequate traffic enforcement, or drop-off zone management.

> **Action:** The City and its partners should support programming to encourage youth to ride. Work with St. John's schools to coordinate delivery of in-school programming educating students about biking best practice.

4.1.3 Education

Bicycle Ambassadors

http://chicagocompletestreets.org/safety/education/

Bicycle Ambassadors are a mobile outreach team that educate people about how to safely use and interact with new bike facilities.. They offer presentations, educational materials, and ride-alongs near new bike routes and a parks, schools, block parties, street festivals, and more. Edmonton's Bike Education Street Team and Chicago's Bicycling Ambassadors are good examples of successful programs. Effectiveness of these programs can be measured by number of people reached, number of events delivered, quantity of educational materials handed out, and through mini-surveys about safety awareness.

Also consider:

- pop-ups at popular community destinations and events are a good opportunity to do public engagement in advance of implementing projects.
- Safe Routes Ambassadors also work in Chicago's public and private schools, offering educational presentations about walking and bicycling safety.

> **Action:** A team of bicycle ambassadors should be hired seasonally to promote and educate all road users about bicycle safety.

Youth Education

It's important to teach people at a young age to ride a bike and be safe on the roads. Educating students is especially important, as they bike more than non-students.[27] The City should collaborate with school boards, the provincial education department and community organizations to reach school-aged youth. The following are a few examples of programs specifically designed for young people.

Cycle Kids

Cycle Kids provides a curriculum for 4th and 5th-grade students can be implemented in physical education and academic classes. Schools are provided with bikes and a curriculum, training for teachers and local police officers, and program assessments. http://www.cyclekids.org

[27] Winters, M., Friesen, M. C., Koehoorn, M., Teschke, K. 2007. Utilitarian Bicycling: A Multilevel Analysis of Climate and Personal Influences. American Journal of Preventive Medicine 32 (1), pp. 52-58. https://www.ajpmonline.org/article/S0749-3797(06)00399-0/abstract

Sprockids

Sprockids is an instructional program designed to engage young people, ages 6 to 18 years, in mountain biking. https://www.sprockids.com/

Action: [see action under safe routes to school]

Bike St. John's Website

The City of St. John's hosts the Bike St. John's website, http://www.bikestjohns.ca, a central source of information about bicycling in the city. After reviewing this site and the resources it offers, this plan recommends the following updates and additions:

Maps

- Updates to interactive bike network map reflecting completion of new facilities by type
- Interactive map showing end of trip facilities including:
  - Mulitmodal hubs
  - Individual racks / bulk racks
  - Secure bike parking (capacity, any user restrictions)
  - Fix-it / maintenance stations
- PDF / printable Bike Network map
- Advertize locations where free printed maps can be found

Network Implementation

- Review of bike network projects' statuses, linked to any related public engagement opportunities.
  - Timeline of projects completed
  - Projects in progress
  - Projects in planning
  - Projects not proceeding (with brief reason)
- Progress / monitoring reports

Facilities Orientation

- Introduce new traffic features
- Instructional videos, graphics, and/or photos
  - E.g., Metrobus Rack and Ride video[28]
- Maintenance of bike facilities
  - Types of maintenance and departments responsible

Riding Opportunities

- Locations of rides by difficulty, distance, time
- Cycling clubs

FAQs

- Frequently asked Questions and Answers (included in Appendix #)
- Include what to do if …
  - E.g., bike theft, incident

Communications

- Upcoming events calendar
- Notices of route disruption/closure or detours

[28] http://www.metrobus.com/bikeracks/xhtml/

Web Design

- Site search function
- Intuitive navigation
- Removal of redundant information

More education

- Up-to-date resources: website and printed materials
- new drivers education license
- city staff education, leading by example
- Marketing campaign for new infrastructure

4.1.4 Enforcement

Initiative ideas?

- conduct workshops with police to collaborate on key messages and safety priorities, develop shared awareness of bike-related laws
- work with RNC (royal newfoundland constabulary) to identify high-priority enforcement and education locations

Bike theft

- Work with RNC
- Project 529
- CPTED

4.2 Campaigns

Include safe cycling material in these campaigns

4.2.1 On-Street Education Campaign

Discuss proper etiquette, rules of road, in friendly and non-judgemental way

4.2.2 Off- Street Education Campaign

Discuss how to share paths politely and safely [cross reference with 4.1.4 and 4.2.2]

4.3 Cycling Information

4.3.1 Printed Material

Ongoing availability of campaign material above?

4.3.2 Online Material

Online material for campaigns and also web only resources like library, maps [cross reference 4.3.3], helpful links etc.

5.0 Policy

This master plan identifies existing policy and legislation governing bicycle facilities and use in the City of St. John's, as found in the following By-Laws, regulations, statutes, and plans:

- St. John's By-Laws
- St. John's Corporate and Operational Policy Manual
- 2019 Envision St. John's Draft Development Regulations
- 2019 Envision St. John's Draft Municipal Plan
- Newfoundland and Labrador Highway Traffic Act
- Highway Traffic Act, Licensing and Equipment Regulations, Consolidated Newfoundland and Labrador Regulation 1007/96

In some cases, this plan proposes amendments to sections in the aforementioned documents. The policy positions and associated actions proposed in this section are organized by topic, sorted alphabetically.

Appendix # provides a detailed review of the Envision St. John's Draft Municipal Plan (2019), making policy recommendations that strengthen St. John's municipal mandate to promote and invest in bicycling. The following two policies apply more generally than the rest, providing overarching guidance on the implementation of the City of St. John's bicycle network.

> **Envision St. John's Municipal Plan:** (to be included in the Envision St. John's Draft Municipal Plan's Chapter 7 Transportation and Infrastructure, Transportation Network, item 5): The City of St. John's shall develop and maintain a safe, inclusive, and convenient cycling network consistent with the Bike St. John's Master Plan and Appendix A, P-? (Bicycle Network).

Definition of a bicycle

The Newfoundland and Labrador Highway Traffic Act defines a "bicycle" as "a device propelled by human power upon which a person may ride, having 2 wheels in tandem;" https://www.assembly.nl.ca/Legislation/sr/statutes/h03.htm

Action: Recommend that the definition of a bicycle not limit the number of wheels (to be inclusive of tricycles, training wheels, cargo bikes, adaptive bikes, etc.)

5.01 ACCIDENT INFORMATION

The Newfoundland and Labrador Highway Traffic Act specifies:

> Accident information
>
> 169. (6) Where an accident occurs by which a person or property is injured, directly or indirectly, owing to the presence or operation of a bicycle on a highway, the person in charge of the bicycle shall
>
> (a) remain at or immediately return to the scene of the accident;
>
> (b) give reasonable assistance; and
>
> (c) give to anyone sustaining loss or injury, and to a traffic officer who is present, his or her name and address and also the name and address of the owner of the bicycle, and, where the bicycle has been licensed and registered the licence or registration number of the bicycle.
>
> (7) Where the accident referred to in subsection (6) results in death or injury to a person or injury to property causing total damage apparently exceeding $250, the person in charge of the bicycle shall immediately make a written report of the accident and shall mail or deliver the report to the nearest peace officer or police station.

Action: The City of St. John's shall develop a By-Law outlining the accident information responsibilities of people in charge of bicycles, involved in an accident causing injury

owing to the presence or operation of a bicycle, on a shared-use path.

Action: The City of St. John's shall work with the Province of Newfoundland and Labrador to amend 169. (6) (c), removing reference to bicycle licensing and registration (see Licensing & Registrations section in this chapter for further rationale).

BIKE SHARE

5.02 BELLS

The City of St. John's does not have an existing By-Law requiring bicycles to be equipped with bells. There is also no requirement in the Highway Traffic Act, or its Licensing and Equipment Regulations.

Action: The City of St. John's shall develop a By-Law requiring bicycles to be equipped with a bell that can be used as a warning.

5.03 BRAKES

The Newfoundland and Labrador Highway Traffic Act Licensing and Equipment Regulations, Consolidated Newfoundland and Labrador Regulation 1007/96 specifies the following regarding brakes on bicycles:

Brakes

25. (11) A bicycle shall be equipped with at least one brake capable of controlling the movement of and stopping the bicycle.[29]

5.04 CLIMATE CHANGE

Bike St. John's Master Plan Policy: The City of St. John's shall collaborate with the Province of Newfoundland and Labrador to develop supportive municipal and Provincial Government policies, practice, and planning guidelines, in alignment with the Provincial Climate Change Action Plan's[30] objective to reduce GHG emissions in the Transportation sector.

DOORING

The Newfoundland and Labrador Highway Traffic Act specifies:
Opening vehicles' doors
165. A person shall not
(a) open the door of a vehicle upon a highway without first taking precautions to ensure that this act will not interfere with the movement of or endanger another person or vehicle; or
(b) leave a door of a vehicle upon a highway open on the side of the vehicle available to moving traffic for a period of time longer than is necessary to load or unload passengers.

[29] https://www.assembly.nl.ca/legislation/sr/regulations/rc961007.htm#25_

[30] https://www.exec.gov.nl.ca/exec/occ/publications/The_Way_Forward_Climate_Change.pdf

ELECTRIC BICYCLES

The City of St. John's does not have an existing By-Law regulating electric bicycle rider behaviour.

Action: The City of St. John's shall develop By-Laws regulating electric bicycle riders. Items for consideration include but are not limited to:

- Permitting electric bicycles on roadways and shared-use paths, with the same responsibilities as people riding non-electric bicycles.
- ~~A default maximum speed (20km/h) when riding an electric bicycle on a shared-use path.~~

5.06 END OF TRIP FACILITIES

~~The Envision St. John's Draft Development Regulations state:~~

~~8.11 Bicycle Parking~~

~~Every Development, excepting that for a Residential Use, but including Apartment Buildings, shall have parking for bicycles. The number of spaces/stalls shall be in the discretion of the Transportation Engineer, and each space/stall shall be equipped with a device designed for bicycle storage and acceptable to the Transportation Engineer.~~

~~**Bike St. John's Master Plan Policy**: The City of St. John's shall ensure the incorporation of bicycle racks and similar bicycle supportive facilities in multi-modal nodes where bicycle users can interface with transit and other active transportation modes.~~

~~**Bike St. John's Master Plan Policy**: The City of St. John's shall encourage owners of commercial businesses and medium to high-density residential properties to install bicycle racks and storage facilities and related bicycle supportive facilities such as showers and change rooms.~~

~~**Bike St. John's Master Plan Policy:** The City of St. John's shall assist businesses and owners of medium to high-density residential properties with the installation of outdoor bicycle racks and storage facilities, particularly where the addition of such facilities can be integrated with street and/or sidewalk improvements.~~

~~**Bike St. John's Master Plan Policy:** The City of St. John's shall ensure that all new subdivision developments incorporate facilities to support bicycle use within their boundaries and appropriate connections to existing or planned links in the City's bicycle network.~~

~~**Action:** Further to the policies listed above, the City of St. John's shall create development regulations for bicycle parking. Types of required bicycle parking may be categorized into classes based on short term vs. long term use, level of security, sheltering, and may include requirements for related amenities such as showers, changing spaces, lockers, and maintenance stations. These guidelines may depend upon:~~

- ~~Land use type~~
- ~~Building size / capacity (e.g., gross floor area, units, seats)~~
- ~~Vehicle parking spaces provided~~

Action: The City of St. John's shall review Corporate and Operational Policy: 09-14-01 Special Events Policy, for amendments required to support Bike St. John's Master Plan implementation. Items for consideration include but are not limited to:

- Bicycle parking requirements for outdoor events / festivals with more than 1,000 attendees.

5.07 FACILITIES MAINTENANCE

Bike St. John's Master Plan Policy: The City of St. John's administration responsible for public works, parks, recreation and transportation shall collaborate to ensure the integrated maintenance of municipal bicycle facilities for safe bicycling across the city.

Action: The City of St. John's shall review Corporate and Operational Policy: 07-02-01 Traffic Markings - Street Line Painting, for amendments required to support Bike St. John's Master Plan implementation.[31] Items for consideration include but are not limited to:

- Crossrides / elephants' feet markings.
- Painted bicycle lanes.
- Painted advisory bicycle lanes.
- Painted bicycle symbols.

Action: The City of St. John's shall review Corporate and Operational Policy: 08-01-01 Snow Clearing Priority (Streets and Sidewalks) for amendments required to support Bike St. John's Master Plan implementation. Items for consideration include but are not limited to:

- Prioritization of clearing snow on shared-use paths
- Prioritization of clearing snow on streets with on-street bicycle facilities.

Action: The City of St. John's shall review Corporate and Operational Policy: 08-01-02 Street Snow Clearing, for amendments required to support Bike St. John's Master Plan implementation. Items for consideration include but are not limited to:

- Strategies for plowing / removing snow from streets with protected bicycle lanes.
- Strategies for plowing / removing snow from traffic calmed bicycle boulevards.
- Strategies for plowing / removing snow from streets painted bicycle lanes.
- Strategies for plowing / removing snow from streets with advisory bicycle lanes.
- Strategies for plowing / removing snow from bicycle accessible paved shoulders.

[31] http://www.stjohns.ca/policies.nsf/nwPolicyNum/07-02-01

Action: The City of St. John's shall review Corporate and Operational Policy: 08-01-04 Sidewalks Snow Clearing, for amendments required to support Bike St. John's Master Plan implementation. Items for consideration include but are not limited to:

- Strategies for removing snow from bicycle facilities located on sidewalks (e.g., racks).

Action: The City of St. John's shall review Corporate and Operational Policy: 08-01-03 Ice Control, for amendments required to support Bike St. John's Master Plan implementation. Items for consideration include but are not limited to:

- Strategies for ice control of slippery conditions on shared-use-paths.

Action: The City of St. John's shall develop a Corporate and Operational Policy for snow clearing on City shared-use-paths.

5.08 GRAND CONCOURSE

The St. John's Parks By-Law states:

> 10. Bicycles shall not be permitted on the Grand Concourse.[32]

Action: The City of St. John's shall amend the St. John's Parks By-Law to permit bicycle riding on designated Grand Concourse shared-use pathways. Pathways shall be designated shared-use by the Public Works Department, in consultation with the Engineering Department to ensure selected pathways are compliant.

5.09 HELMETS

Section 129 of the Newfoundland and Labrador Highway Traffic Act specifies the following:

> (2) A person who is riding a bicycle,
> (c.1) shall wear a bicycle helmet that complies with the regulations and shall have the chin strap of the helmet securely fastened under the chin;
>
> (3) A parent or custodial guardian of a person under 16 years of age shall not authorize or knowingly permit that person to ride a bicycle unless he or she is wearing a bicycle helmet as required by paragraph (2)(c.1).
>
> (4) A person who is 16 years of age or older who fails to comply with or otherwise contravenes paragraph (2)(c.1) is guilty of an offence and is liable on summary conviction to the penalty prescribed in the Schedule.
>
> (5) A parent or custodial guardian who fails to comply with or otherwise contravenes subsection (3) is guilty of an

[32] http://www.stjohns.ca/bylaws.nsf/nwByLawNum/1488

offence and is liable on summary conviction to the penalty prescribed in the Schedule.[33]

Section 195 (1) (a) establishes the ability of the minister to make regulations:

(a.1) prescribing standards or specifications for bicycle helmets;

(a.2) providing for and requiring the identification and marking of bicycle helmets;

Accordingly, the Newfoundland and Labrador Highway Traffic Act Licensing and Equipment Regulations, Consolidated Newfoundland and Labrador Regulation 1007/96 specifies the following related to bicycle helmets:

44.1 (1) A bicycle helmet referred to in paragraph 129(2)(c.1) of the Act shall

(a) have a smooth outer surface;

(b) be constructed so that it is capable of absorbing energy on impact;

(c) be strongly attached to a chin strap designed to be fastened under the chin of the person wearing it;

(d) not be damaged from use, misuse or be modified in a way that reduces the effectiveness of the bicycle helmet;

(e) properly fit the person wearing it; and

(f) have a mark or label on it of the manufacturer or one of the following organizations indicating that the bicycle helmet conforms to standards or specifications for bicycle helmets prescribed by one of the following organizations:

(i) Canadian Standards Association,

(ii) Snell Memorial Foundation,

(iii) American National Standards Institute,

(iv) American Society for Testing and Materials,

(v) United States Consumer Product Safety Commission,

(vi) British Standards Institution, or

(vii) European Committee for Standardization.

(2) A person is exempted from the requirement to wear a bicycle helmet under paragraph 129(2)(c.1) of the Act where that person holds a valid exemption certificate.

(3) A qualified medical practitioner or a qualified nurse practitioner may issue an exemption certificate to a person where he or she is satisfied that the person is unable to wear a bicycle helmet for medical reasons.

(4) The registrar or a person designated by him or her may issue an exemption certificate to a person where he or she is satisfied that

(a) wearing a bicycle helmet is contrary to a genuine religious faith to which the person subscribes; or

(b) the person should be exempted from the requirement to wear a bicycle helmet.

(5) An exemption certificate may include an expiry date.[34]

[33] https://www.assembly.nl.ca/Legislation/sr/statutes/h03.htm#129_

[34] https://www.assembly.nl.ca/legislation/sr/regulations/rc961007.htm#44_1

The St. John's Bicycle Helmet By-Law (No 1332) states that no person shall ride a bicycle unless that person is wearing a bicycle helmet. (2)(a) No parent or guardian shall knowingly permit a child under twelve to ride without a bicycle helmet. (3)

> **Action:** ~~The City of St. John's shall continue to monitor and review the body of research on helmet legislation and helmet use, helmet legislation and injury prevention, helmet legislation and hospitalization rates, and helmet legislation and cycling practice/modal share, to assess whether helmet legislation hinders plan implementation.~~ Recommend not having helmet legislation at all OR only requiring helmets for minors.

5.10 IDAHO STOPS

The City of St. John's does not have an existing By-Law pertaining to 'Idaho stops', for which bicycle riders are allowed to treat Stop signs as Yield signs. The Newfoundland and Labrador Highway Traffic Act makes no mention of Idaho stops; however, it specifies:

> 129. (1) Except as provided in this section, a person riding a bicycle upon a highway has the same rights and duties as a driver.

These rights and duties extend to bicycle rider behaviour at Stop signs. Accordingly, under provincial law, Stop sign regulations apply to people riding bicycles in the same way as they do drivers of vehicles.

Action: As the bicycle network develops, the City of St. John's shall review research for evidence whether Idaho stops will support network implementation, evaluate the safety of their potential application, and assess the need to work with the Province to amend the Highway Traffic Act to permit this behaviour. Reference may be made to Idaho Title 49 Motor Vehicles, Chapter 7 Pedestrians and Bicycles, section 49-720. STOPPING — TURN AND STOP SIGNALS for legislative precedent.

5.11 LICENSING & REGISTRATION

The Newfoundland and Labrador Highway Traffic Act requires operators of motor vehicles to be licensed (Part III, 43 (1)) and motor vehicles registered (Part II, 10 (1)).[35] It is unlikely that the City of St. John's has the legal authority to introduce a licensing and registration scheme for bicycles, as licensing and motor vehicle registration is a provincial responsibility.

Requiring licensing of residents owning and using bicycles creates barriers to cycling, is expensive, requires creation of significant bureaucracy, is difficult to enforce, would require the licensing of children, and is an ineffective solution to the issues it tries to address (e.g., pedestrian safety, compliance with traffic laws, bike theft).[36] This plan does not recommend licensing of bicycle riders or registration of bicycles.

[35] https://www.assembly.nl.ca/legislation/sr/statutes/h03.htm#10_
[36] Bike Calgary. "Licensing." Bike Calgary. Accessed 5 March 2019. http://bikecalgary.org/licensing/.

5.12 LIGHTS

Under the Newfoundland and Labrador Highway Traffic Act, the minister may make regulations for lights on bicycles under section 195 (1) (iii). The Highway Traffic Act Licensing and Equipment Regulations, Consolidated Newfoundland and Labrador Regulation 1007/96 outlines the following:

> Bicycle or tricycle
>
> 22. A bicycle or tricycle, when in motion on a highway later than one-half hour before sunset and earlier than one-half hour after sunrise, shall be equipped with a lamp which shall cast a white light on the road in front and either a red lamp so fastened as to be clearly visible from the rear or a reflector so placed as to reflect the headlights of vehicles approaching from the rear.[37]

5.13 OTHER WHEELED MODES

The St. John's Skateboard, In-Line Skates and Scooter By-Law regulates skateboards, in-line skates and scooters.[38]

5.14 PASSING

The Newfoundland and Labrador Highway Traffic Act specifies:

> Overtaking another vehicle
>
> 96. (1) The driver of a vehicle which is overtaking another vehicle…
>
> (c.1) shall, where the vehicle which is being overtaken is a bicycle, pass the bicycle at a distance of at least
>
> (i) one metre from the bicycle where the speed limit is 60 kilometres an hour or less, or
>
> (ii) one and a half metres from the bicycle where the speed limit is greater than 60 kilometres an hour; and
>
> (d) shall not return to the right side of the roadway until safely clear of the other vehicle and after having in the manner prescribed by subsection 117(3) signalled an intention to do so.[39]

5.15 RACING ON HIGHWAYS

The Newfoundland and Labrador Highway Traffic Act specifies:

> Racing on highways
>
> 168. (1) A person shall not drive a vehicle or bicycle in a race with another vehicle or bicycle on a highway.
>
> (2) Where a peace officer has reasonable grounds to believe that a person has committed an offence under this section, the peace officer shall give the person a notice of suspension.
>
> (3) Upon the notice of suspension being given under subsection (2), the person's driver's licence or driving privileges are suspended for a period of 7

[37] https://www.assembly.nl.ca/legislation/sr/regulations/rc961007.htm#22_

[38] http://www.stjohns.ca/bylaws.nsf/nwByLawNum/1443

[39] https://www.assembly.nl.ca/Legislation/sr/statutes/h03.htm#96_

days beginning on the second day after the notice of suspension is given.

Action: The City of St. John's shall develop a By-Law prohibiting racing bicycles on shared-use paths.

RIDING ON ROADWAYS

The Newfoundland and Labrador Highway Traffic Act specifies:
129 (b) subject to paragraph (a), shall ride as near as practicable to the right-hand curb or edge of a roadway;
129 (c) shall not ride abreast of another person who is riding a bicycle upon a roadway;

Action: The City of St. John's shall work with the Province of Newfoundland and Labrador to amend the Highway Traffic Act to allow a person riding a bicycle to take the full lane (or something like this).

Action: The City of St. John's shall work with the Province of Newfoundland and Labrador to amend the Highway Traffic Act to allow riding two abreast.

5.16 ROADWAY & TRAIL UPGRADES

Bike St. John's Master Plan Policy: As existing roads and trails are upgraded or renewed, the City of St. John's shall assess the feasibility and desirability of adding or enhancing bicycle facilities.

Proposal: Further to this policy, it is proposed that Council refer to Figure # (Bicycle Network) as a guide for assessing route opportunities for bicycle facility addition or enhancement as existing roads and trails are upgraded or renewed.

5.17 SHARED-USE CROSSINGS

The City of St. John's does not have an existing By-Law regulating bicycle rider behaviour in shared-use crossings (also referred to as multi-use crossings, 'crossrides', or designated by markings called 'elephants' feet'). Furthermore, the Newfoundland and Labrador Highway Traffic Act makes no mention of shared-use crossings.

Action: The City of St. John's shall work with the Province of Newfoundland and Labrador to amend the Highway Traffic Act to include a legal definition of shared-use crossings, their design, proper use, and penalties for related offences. Reference may be made to the Ontario Traffic Manual (OTM) Book 18 for guidance in crafting this amendment.

Action: The City of St. John's shall develop a set of By-Laws that regulate bicycle rider behaviour in shared-use crossings. Items for consideration include but are not limited to:

- Ability of a Traffic Engineer to designate crosswalks in which people may ride bicycles to cross a roadway.

- Delineation of shared-use crossings by elephants' feet markings.
- Vehicle operators yielding the right-of-way to both pedestrians and people riding bicycles crossing a roadway in a shared-use crossing.
- Maintaining the same rights and obligations for users of a shared-use crossing as those of a pedestrian using a crosswalk.
- Bicycle riders yielding to pedestrians entering/within/exiting a shared-use crossing.

5.18 SHARED-USE PATHS

The City of St. John's does not have an existing By-Law regulating bicycle rider behaviour on shared-use paths.

Action: The City of St. John's shall develop an educational marketing campaign encouraging respectful ~~By-Laws regulating~~ bicycle rider behaviour on multi-use paths. Items for consideration include but are not limited to:

- A default maximum speed (20km/h) when riding a bicycle on a shared-use path.
- Riding a bicycle at a reasonable speed on a shared-use pathway, relative to pathway condition, visibility, and traffic volume.
- Riding a bicycle in a manner that is safe for the bicycle rider and other people on the shared-use path.
- Keeping to the right side of the shared-use path except when passing.
- Yielding the right-of-way to users on the right when two shared-use paths intersect.
- Ringing a bell / using one's voice to alert others when passing on a bicycle.
- Keeping to shared-use paths in order to protect habitat.
- Prohibiting riding a bicycle with a leashed dog on shared-use paths.

The Newfoundland and Labrador Highway Traffic Act specifies that:

129. (2) A person who is riding a bicycle,
(i) shall not ride a bicycle on a roadway where there is a usable path intended for the use of bicycles adjacent to the roadway.

Action: The City of St. John's shall work with the Province of Newfoundland and Labrador to amend Highway Traffic Act 129(2)(i). The bicycle network proposes shared-use pathways offset from roads; however, people riding bicycles should not be limited to riding only on these pathways. People should still be able to ride bicycles on roadways when there is an adjacent path intended for use of bicycles.

5.19 SIDEWALK RIDING

The Newfoundland and Labrador Highway Traffic Act specifies that:

> 129. (2) A person who is riding a bicycle,
> (a) shall not ride on a sidewalk.[40]

Action: The City of St. John's shall work with the Province of Newfoundland and Labrador to amend the Highway Traffic Act, opening sidewalk bicycle riding to youth (14 and under) riding a child's tricycle or bicycle. Items for consideration include but are not limited to:

- Ability of municipal Traffic Engineers to designate portions of sidewalks where bicycles may be ridden.
- Interactions between people riding bicycles and pedestrians using a sidewalk (bicycle riders should not interfere).
- ~~Prohibiting youth riding a bicycle on a sidewalk where there is a shared-use path intended for the use of bicycles adjacent to the roadway.~~

5.20 TOWING OF BICYCLISTS

The Newfoundland and Labrador Highway Traffic Act specifies:

> Towing of bicyclists, etc. prohibited
>
> 130. A person whether on foot or riding upon a bicycle, motorcycle, coaster, sled, toboggan, play vehicle or upon skates, roller skates, skis or skateboard or similar device shall not attach it or them or himself or herself by hand or other means to a vehicle upon a roadway.

Does this make bike trailers illegal?

5.21 TRANSPORTATION DEMAND MANAGEMENT

When more people switch from commuting alone in a car, employers and post-secondary institutions reap the benefits of higher productivity, improved mental and physical health of commuters, a lower carbon footprint and money saved on parking. Transportation Demand Management (TDM) programs enable major employers and post-secondary institutions to provide better commuting options with the goal of reducing single-occupancy vehicle trips.

Action: The City of St. John's shall develop and distribute a TDM checklist for major employers and post-secondary institutions. TDM program implementation should be monitored and successes advertised.

Action: The City of St John's shall lead by example and implement TDM measures for its employees.

[40] https://www.assembly.nl.ca/Legislation/sr/statutes/h03.htm#129_

5.22 VEHICLE PARKING IN BICYCLE FACILITIES

As part of implementing the 2009 Cycling Master Plan bicycle facilities, on July 26, 2010 the City established parking restrictions on streets with bicycle lanes. On September 28, 2015, Council rescinded this decision in relation to winter on-street parking:

> That Council rescind its decision of July 26, 2010 with respect to the approval of the Cycling Master Plan insofar as to remove all parking restrictions imposed on streets with bicycle lanes during the winter months from the period November 1 - March 31 of each year, and that this be implemented this coming November 1, 2015.

This master plan proposes a new network of routes, replacing the 2009 Cycling Master Plan and its associated on-street parking restrictions. In some cases, routes recommended in the former 2009 Cycling Master Plan are not carried over. Accordingly, the removal of certain former facilities, not incorporated in this master plan's bicycle network, means the permanent removal of associated parking restrictions on those roadways.

6.0 Action Plan

Meaningfully implementing this master plan requires a series of concrete actions be identified that can then be assigned to the appropriate staff to complete. These actions must be founded on the vision of this plan and directly contribute to the goals identified in section [3.0]. Further, these actions must be complemented by monitoring metrics that can indicate progress.

This expansion is summarized in Table ##. The following section reorganizes these actions and projects according to the implementation phase, with additional guiding information related to timelines, responsible actors, costs, and relevant policy.

	Objectives	**Actions**	**Measure**
Infrastructure	Network	· Catalyst projects · Remove old signs · End-of-trip facilities · Ongoing network building (includes engagement)	· Projects complete · % complete · # public bike parking (basic & better) · Km's complete (incl. type)
	Wayfinding	· Strategy/plan · Signs · Maps	
	Maintenance	· Upkeep & repair · Seasonal maintenance · Temporary conditions (detours for during construction or events)	
Culture	Programs	· Events · Training	
	Campaigns	· On-street · Off-street	
	Information	· Website · Printed	
Policy	City support	· Development Regs · Official Policies · Position statement (eg. Bike share or other external initiatives	

	Legal	· By-laws · Legislation	

	Goals		Objectives		Actions & Projects	Metrics
1	SAFETY IS PARAMOUNT: When cycling feels safe, more people choose to ride. With more people riding bikes, cycling is safer for everyone.	1.A	People feel safe riding bikes.	1.A.1	Intercept surveys	User satisfaction/perception of safety
		1.B	Reduce bicycle accidents/collisions (vehicle and non-vehicle) are reduced.	1.B.1	Collect collision/accident data	# of bicycle-vehicle conflicts # of bicycle-pedestrian conflicts # of bicycle-only accidents # of resulting infrastructure upgrades
				1.B.2	Partner with Health Agency to collect emergency room data	
				1.B.3	Partner with RNC to collect collision data	
				1.B.4	Promote Citizen self-reporting website protocol (bikemaps.org)	
		1.C	More people ride bikes.	1.C.1	Conduct counts (automated and manual) on key routes/areas.	# of users types of users
				1.C.2	Detailed contract documents, tender, and construction of Catalyst Projects.	# of km constructed out of total proposed.
				1.C.3	Implement natural corridor BACKBONE routes.	# of km constructed out of total proposed.
				1.C.4	Implement street corridor BACKBONE routes.	# of km constructed out of total proposed.
				1.C.5	Implement natural corridor CONNECTOR routes.	# of km constructed out of total proposed.
				1.C.6	Implement street corridor CONNECTOR routes.	# of km constructed out of total proposed.
2	CYCLING FRIENDLY CULTURE: People driving, biking, taking transit, walking or rolling respect and care about each other.	2.A	Host events that support cycling awareness, education, and practice.	2.A.1	Coordinate Bike Month at start of cycling season - May or June	# of municipal programs/events offered
				2.A.2	Closed-Street Event “Bike Fest” during Bike Month	# of attendees
		2.B	Develop partnerships and collaborate with relevant organizations.	2.B.1	Partner with Can-Bike.	# of non-municipal programs/events offered # of “Bike Partners”
				2.B.2	Partner with Ordinary Spokes.	
				2.B.3	Partner with MUN.	
				2.B.4	Cycling education programs in schools.	
		2.C	Resident awareness of progress toward plan Vision statement.	2.C.1	Conduct annual report on state of cycling in St. John’s	Report published during Bike Month each year, summarizing metrics/trends.

3	CONVENIENT & INCLUSIVE: Riding a bike is an easy and attractive way to get around the city for people of all ages and abilities.	3.A	People of all ages and abilities use cycling facilities.	3.A.1	Bike share/access to bikes inexpensively.	
				3.A.2	Monitor age/gender/families/ comfort levels of bike riders via intercept surveys	# of people from different populations who bike
				3.A.3	Establish strategy for regulating speed on shared facilities	
		3.B	Cycling facilities are well maintained year-round.	3.B.1	Establish strategy for regular upkeep & repair	
				3.B.2	Establish strategy for seasonal maintenance (i.e., snow clearing)	
				3.B.3	Establish strategy for temporary conditions (e.g., detours during construction or events)	
4	INTEGRATED: Bike routes are connected with other ways to travel, such as streets, trails, and transit stops.	4.A	Replace trips made by personal vehicle with active transportation	4.A.1	Monitor Statistics Canada Journey to Work Data	# of people who choose biking as main mode of commuting
				4.A.2	Construct multimodal Hubs integrated with transit facilities/stops.	# of multimodal hubs with integrated transit
			modes and public transit.			constructed out of total proposed.
				4.A.3	Provision of bike racks on buses (continue)	# of buses with bike racks.
5	WELL-CONNECTED: People can bike to regional, city-wide, and neighbourho	5.A	Strong end of trip facilities.	5.A.1	Make bike-only parking available at end of trip destinations.	# of bike lockers # of bike corrals # of bike
				5.A.2	Employment centres provide changing/shower amenities for bike commuters.	# of bike-friendly businesses providing end of trip facilities.
				5.A.3	Offer incentives for businesses to install end of trip facilities (E.g., Public Works in-kind contribution to install a bike corral)	# of bike-friendly businesses collaborating with the City to provide bike facilities
		5.B	Consistent branding throughout network.	5.B.1	Create branding strategy	

	od destinations on seamless, intuitive bike routes that are easy to navigate.	5.C	Easy-to-follow wayfinding throughout network.	5.C.1	Remove old signs along past routes decommissioned/not carried over into this plan.	
				5.C.2	Establish plan	
				5.C.3	Design & Install Signs	# of km of network signed
				5.C.4	Create & Disseminate Easy-to-Read Maps	# of maps printed # of views of maps online

6.1 Implementation Phasing

This Action Plan proposes three implementation phases that move the existing network of streets and trails forward to accommodate and promote commuter, recreation and active cycling. The same actions and projects presented in Table # above, according to the overarching plan vision, goals, and objectives, are organized according to the implementation phase in Table # below. It is important to note that the implementation of this plan results in the ancillary benefit of moving streets from being vehicle dominant corridors and trails from being pedestrian-dominant corridors to a series of connected corridors that expand this single-dominance to shared-use linkage.

6.1.1 Capitalize on Opportunities

As existing roads and trails are upgraded or renewed, the City of St. John's shall assess the feasibility and desirability of adding or enhancing bicycle facilities.

6.1.2 Communications & Public Engagement during Route Implementation

Public engagement for design & construction

- outline something about how and when to do public engagement
-

New route activation

- bike ambassadors / educational street team
- marketing campaign

6.1.3 Phase One - Network Foundation

This phase sets that physical and administrative foundation from which the city-wide network will grow. Infrastructure projects provide safe and comfortable shared-use corridors that create venues that encourage residents to use bikes for recreation and commuter purposes. Highly visible trails and street crossing combine with increased activity to encourage increased participation and support for network growth.

6.1.4 Phase Two - Preparing for Expansion

This phase prepares the City for physical network expansion through the creation of detailed program and construction detailing.

6.1.5 Phase Three - Expansion

This phase rationally implements the backbone and collector links proposed in this master plan to complete the network. Although renewal will occur relative to the physical upgrade requirements that ensure sustainable street surfaces, backbone facility improvements should receive a higher priority than the connector facilities to ensure the resident-identified destinations are linked to the network as soon as possible.

G.O. A/P #	Actions & Projects	Phase			Timeline	Actor(s)/ Department(s)	Cost	Policy
		1	2	3				

1.A.1
1.B.1
1.B.2
1.B.3
1.B.4
1.C.1
2.C.1
3.A.2
4.A.1
	Refine and implement Monitoring Plan, train staff, and complete ongoing:
	• Intercept surveys
	• Collision/accident data review
	  ○ Partnerships with RCMP and Health Agency
	  ○ Self-reported incident protocol
	• Counts - Spot and Cordon
	  ○ Automated
	  ○ Manual
		x	x	x	Ongoing, Annual Report issued during Bike Month	Engineering, Corporate Information Services, Communications	Staff Time + cost of backbone automated trail counters : $9500	BSJ-1
								BSJ-2
								BSJ-4
								BSJ-5
								BSJ-9

1.C.2	Detailed contract documents, tender, and construction of Catalyst Project 1: Empire Avenue (King's Bridge Road to Columbus Drive)	x			TBD	Engineering	TBD	
1.C.2	Detailed contract documents, tender, and construction of Catalyst Project 2: Virginia River Trail (Quidi Vidi to Penny Crescent)	x			TBD	Engineering	TBD	
1.C.2	Detailed contract documents, tender, and construction of Catalyst Project 3: Rennies River Trail (Empire Avenue Trail to Elizabeth Avenue to Prince Philip Drive)	x			TBD	Engineering	TBD	
2.A.1 2.A.2	Host annual Bike Month, with closed-street event "Bike Fest" to kick-off summer cycling season.	x	x	x	Annual, every May or June	Bike St. John's Advisory Committee, Engineering, Communications	Staff Time	BSJ-1
1.C.3 1.C.4 1.C.5 1.C.6	Class C design for all shared-use paths.	x			TBD	Engineering	TBD	BSJ-11
3.B.1 3.B.2 3.B.3	Establish and implement plan for cycling facility maintenance	x	x	x	Ongoing	Engineering, Public Works	Staff Time	BSJ-1 BSJ-3
3.A.3	Establish and implement plan for regulating speed on shared facilities.	x			TBD	Engineering		BSJ-1
5.B.1	Establish and implement branding strategy.	x			Ongoing	Corporate Information Services, Engineering, Communications, Bike St. John's Advisory Committee	TBD	
5.C.1 5.C.2 5.C.3 5.C.4	Establish wayfinding program with consistent branding. • Remove signs on decommissioned routes • Design and install signs • Create & Disseminate Easy-to-Read Maps	x	x	x	Ongoing	Engineering, Public Work	TBD	BSJ-9

	Adopt Bike St. John's Master Plan policy	x			Upon plan adoption.	Council	Staff Time	Ch. 6.4
2.B.1 2.B.2 2.B.3 2.B.4	Partnerships to support cycling education programs: • Can-Bike • Ordinary Spokes • MUN • Schools		x		TBD	Bike St. John's Advisory Committee	Staff Time & Volunteers' In-Kind Contribution	BSJ-1
3.A.1	Support creation of city-wide bike share program.		x		TBD	Bike St. John's Advisory Committee	Volunteers' In-Kind Contribution	
4.A.2	Construction of multimodal hubs integrated with transit facilities/stops		x	x	TBD	Engineering, Public Works, Metrobus	TBD	BSJ-6
4.A.3	Provide bike racks on buses (continue)	x	x	x	Ongoing	Metrobus	TBD	BSJ-6
5.A.1	Install bike parking at major municipal trip generating facilities.		x		TBD	Planning, Engineering, Public Works	TBD	TBD
5.A.2 5.A.3	Encourage/incentivize private organizations to provide bike parking and other end of trip bicycle facilities.		x		TBD	Planning, Engineering, Public Works, Bike St. John's Advisory Committee	TBD	BSJ-7 BSJ-8
1.C.3 1.C.4 1.C.5 1.C.6	Detailed contract documents, tender, and construction of remaining network routes (see Table XX for prioritization of routes).			x	Long-term, to be implemented in accordance with priority and opportunity.	Engineering	TBD	BSJ-10 BSJ-11

6.3 Route Prioritization

The cycling network evolves from the existing street and trail network. To ensure routes are valuable to people who bike of all ages and abilities, the following criteria were used to prioritize network links. This prioritization informs, but does not dictate, implementation:

- Cycling Potential: how comfortable is this route?
  1. Safety from motor vehicles
  2. Physical and mental exertion
  3. Directness
  4. Attractiveness
- Network Connectivity: how well does this route contribute to network building?
  1. Crossing major barriers
  2. Connecting to existing routes
- Cycling Demand: how useful is this route?
  1. Population and destination density
  2. Equity
- Constructability: how easy is it to achieve this project?
  1. Community acceptance
  2. Feasibility
  3. Cost

A Strong Backbone Network

The following section differentiates a backbone network from the full network of recommended bike routes. The Backbone Network components identified in this master plan serve to connect the essential destinations throughout the city. Connecting routes

extend from this backbone, reaching into neighbourhoods and commercial zones to increase connectivity and establish the full network.

6.4 The Backbone Network

The Backbone Network represents a minimal, core network of high quality, safe, and comfortable cycling routes across the city (Figure ##). The Backbone Network is primarily connected by shared-use paths offset from street corridors or located within natural corridors, with on-street links where shared-use paths are not possible.

The Backbone Network is an important tool for implementation. It is strategic to prioritize a minimum citywide network of comfortable and attractive bike routes, ensuring basic connectivity across the city to attract new riders.

The adjacent Table # details the implementation prioritization of routes based on their cycling potential, network connectivity, cycling demand, and constructability. Routes shown in Table # are organized in order (from top to bottom) of highest to lowest priority. Bolded routes represent the three Catalyst Projects, for which 33% design is completed as part of this master plan (discussed further in Section #. #).

Although useful, the Backbone Network and prioritization presented in Table # do not dictate a definitive order for project implementation. A key tenant of implementation will be to take advantage of opportunities presented by other municipal works and development activity to build the network. The City will capitalize on opportunities, should they arise, to implement any routes on the full network.

Route	From	To	CYCLING POTENTIAL	NETWORK CONNECTIVITY	CYCLING DEMAND	CONSTRUCT - ABILITY
Kelly's Brook Trail	**Columbus Drive**	**Kings Bridge Road**	**5**	**5**	**5**	**4**
Rennies River Trail	**Portugal Cove Road**	**Prince Philip @ Allandale**	**4**	**5**	**4**	**3**
Quidi Vidi Lake Trail (north side)	Kings Bridge Road	Cadet Road	5	3	3	5
Prince Philip Drive (via field + CONA)	Allendale Road	Portugal Cove Road	4	3	5	3
Virginia River Trail	**Quidi Vidi Lake**	**Penny Crescent**	**4**		**3**	**3**
Mundy Pond Road + St. Claire Avenue (via closed schools)	Columbus Drive	LeMarchant Road	3	4	5	3
Newtown Road + MUN paths	Kelly's Brook Trail	The Works @ MUN	4	3	3	5
Canada Drive	(Team Gushue Hwy)	Columbus Drive		4	3	5
Water Street	T'Railway	Harbour Drive	2	4	4	4

Majors Path	Portugal Cove Rd/Virginia RIver Trail	Torbay Road	3	4	3	4
LeMarchant + Harvey + Military	St. Claire Ave	Kings Bridge Road/Cavendish Square		5	5	2
Bannerman + hill (route TBD)	Kelly's Brook Trail	Military Road	4	4	3	2
MacDonald Drive + Nhbd greenbelts	Portugal Cove Road	Virginia River Trail	4	3	3	3
Columbus Drive	T'Railway	Captain Whelan Drive	2	5	2	3

6.5 The Full Network

The Backbone Network is supported by the Full Network, bringing high-quality cycling routes closer to people and their destinations. As opportunities arise to build any routes included on the full network, they should be implemented

6.6 The Extended Network

The extended network map in Appendix XX, shows potential routes that are not prioritized as part of this master plan. These routes should be evaluated for implementation on a case-by-case basis when construction opportunities arise.

Paved shoulders

6.7 Catalyst Projects

This plan proposes three catalyst projects:

1. Kelly's Brook Trail from Columbus Drive to Kings Bridge Road
2. Rennie's River Trail from Portugal Cove Road to Prince Philip Drive
3. Virginia River Trail from Quidi Vidi Lake to Penny Crescent

These three projects reflect top priority, ranked according to the aforementioned prioritization criteria. Their construction will serve the community well, addressing presently underserved areas and resulting in increased Bike Network use relatively quickly. They are not 'low hanging fruit' in terms of constructability, but they are very valuable as people-movers, creating comfortable links and providing important connections, fulfilling presently unmet cycling demand.

6.7.1 Catalyst Project #1 - Kelly's Brook Trail

Context:

This project upgrades an existing walking trail to a shared-use path from Kings Bridge Road to Columbus Drive. The trail links several neighbourhoods, running through an important east-west greenway that largely parallels Empire Avenue.

Residents preferred this route because of its ability to connect people of varied backgrounds to multiple essential academic, civic, and recreation destinations. The trail enhances equitability, linking western and downtown neighbourhoods.

Existing Issues:

The existing walking trail provides an ideal surface to evolve into the desired shared-use corridor. For the most part, trail width can expand to the required 3.5 meter-wide surface. Portions of the existing trail bordering Empire Avenue require relocation to avoid steep sections, ensuring accessibility along the entire corridor. Several street intersections and crossings require upgrade to provide a continuously comfortable and safe trail.

Why it's important:

- East / west connector
- Links several neighbourhoods
- Starts moving people into and around the Downtown
- Reaches many essential destinations
- More comfortable topography

Cost Estimate:

- $1,895,930.12

6.7.2 Catalyst Project #2 - Rennie's River Trail

Context:

This project upgrades the existing walking trail to a shared-use path from the proposed Kelly's Brook shared-use path (Catalyst Project #1) to Prince Philip Drive. The existing trail sits within a beautiful greenway and runs north-south, adjacent to Rennies Mill River.

The trail connects the lands adjacent to Memorial University of Newfoundland, College of the North Atlantic, and the Confederation Building to residential neighbourhoods that back up to the trail, and eventually to downtown neighbourhoods.

Existing Issues:

In many areas, the existing trail falls within a narrow corridor, includes sections of boardwalk that do not meet minimal widths for safe shared-use, and has a steep section that must be re-routed to create accessible slopes. The combination of retention walls, trail sections with improved drainage, as well as cut-fill exercises will support the transition of the existing trail to the required 3.5 meter-wide shared-use path.

Why it's important:

- Connects existing shared-use path on Prince Philip Drive to Catalyst Project #1
- Starts to establish the network's grid
- Destinations in this area can be accessed conveniently from different points of origin

Cost Estimate:

- $911,516.47

6.7.3 Catalyst Project #3 - Virginia River Trail

Context:

This project connects several neighbourhoods and important destinations along an existing greenway that extends from Quidi Vidi Lake to Penny Crescent. Several land uses and natural spaces border this corridor and existing walking trail.

Residents envision a shared-use path that provides safe and comfortable movement for residents of all ages, for both recreation and commuter reasons. This project proposes to transform the existing walking trail to a 3.5 meter-wide asphalt surface.

Existing Issues:

In some areas, the existing trail is located within narrow right-of-ways and/or is located immediately adjacent to Virginia River. Upgrading the existing trail will require widened surfaces and retaining walls where narrow surfaces border the stream. Careful design strategies are needed to improve links to and across several streets that intersect the trail. In addition to these issues, several boardwalk sections cross Virginia River and drainage ditches. These are in good condition and will remain; therefore, signage is required to inform residents that 'reduced-width sections' are ahead.

Why it's important:

- South-east to north-west connection
- Backbone for several neighbourhoods north of Downtown
- More linear connection for adjacent neighbourhoods

Cost Estimate:

- From Quidi Vidi Lake to Logy Bay Road: $832,895.60
- From Logy Bay Road to Penny Crescent: $863,295.73
- TOTAL: $1,696,191.33

6.8 Funding Sources

The following sources of funding may be accessed to complete projects and actions identified in this plan.

- Green Municipal Fund, Federation of Canadian Municipalities
- Municipalities for Climate Innovation Program, Federation of Canadian Municipalities
- Gas Tax Fund, Government of Canada
- Multi-Year Capital Works Funding, Government of Newfoundland and Labrador
- Atlantic Canadian Opportunities Agency
- Community Healthy Living Fund, Government of Newfoundland and Labrador
- Low Carbon Economy Challenge / Low Carbon Economy Fund, Government of Canada
- Community Transportation Program Grant, Government of Newfoundland and Labrador

7.0 Monitoring and Evaluation Plan

This section outlines recommendations for a Monitoring Plan to track and evaluate the evolution of cycling usage within the City. Data to be monitored over the course of the plan's implementation will be collected using a variety of methods. There are two major aspects guiding the routes chosen to monitor usage:

1. Existing facilities: those facilities that already exist and are working well and
2. New or upgraded facilities: places where changes are made. Before new facilities are built, their usage should be added to this monitoring program in accordance with the following guidelines.

Measuring the progress of indicators such as quantity of riders, types of riders, helmet use, perceptions of safety, and user satisfaction will allow the City to address issues and opportunities in a timely manner and will contribute to the successful achievement of the master plan.

intro should say

- why monitoring and evaluation is important
- reference some city policy about openness or data-based decision making if possible
- summarize goals/targets that need to be tracked (ridership, infrastructure and programming)
- outline data collection methods based on how to measure the identified goals/targets

7.1 Methods

There are five key methods of monitoring cycling usage as well as network safety and functionality: Census data, counts (both permanent and manual), intercept surveys, collision/injury data, and quantity of facilities completed/installed. When used together, these methods help to tell the story of cycling in St. John's.

7.1.1 Census Data

Statistics Canada publishes "Journey to Work" data by travel mode every 5 years. that breaks down the main modes of commuting which residents of a jurisdiction use. This information should be reviewed and compared, Census period to Census period, for any changes to the number of people who use a bike as their main mode of commuting. It is important to note that this data does not give a full picture of cycling for other trip purposes (outside of commuting) in the city.

7.1.2 Household Travel Survey

[description]

Citizen Satisfaction Survey

- can we use this to ask some basic questions?
- http://www.stjohns.ca/sites/default/files/files/publication/Citizen%20Satisfaction%20Survey_Fact%20Sheet_2018_05_07.pdf
- http://www.stjohns.ca/sites/default/files/files/publication/City%20of%20St.%20John%27s%20-%202018%20Citizen%20Survey%20Report%20-%20Final%20-%20April%2030.pdf
-

7.1.3 Cordon & Spot Counts

Counts monitor the number of people using a particular segment of the network over a certain period of time, compared to an established baseline count taken at the start of the monitoring program. During counting, data can also be collected about user behaviour (e.g., helmet use, turning movements).

Cordon counts evaluate the number of people entering/exiting key locations within the network. Spot counts can be done manually or with automatic counters at a particular point on a route. Ongoing, permanent counts are preferred for monitoring.

TheyManual spot counts (counts completed in-person by a trained counter) can be used to monitor usage during key time periods or full days. Infrared, automated trail counters detect cyclists and/or pedestrians and can be installed permanently or temporarily within the network at a relatively low cost (e.g., Trafx system with three counters costs $2215 USD plus ~ $500 per additional counter). Counters with digital totem displays help people to feel they are part of something greater and demonstrate people are using the network. Pneumatic loop and embedded loop counters are also good options, but only measure people riding bikes. Pneumatic loop counters can easily be moved around to measure different locations.

Count Considerations:

- Weather can significantly affect count data. Bicycle ridership varies with weather more than any other travel mode.
- Counts should be avoided during special events, festivals or holidays.
- Some bike facilities see increased usage on evenings and weekends, which is different from motor vehicle counts.
- Manual counts allow counters to record additional information such as turning movements and helmet usage.
- Common time intervals for counts are morning and afternoon peak hour usage (7:00 to 9:00 am, 4:00 to 6:00 pm). This afternoon period can be extended from 2:30 pm to 6:30 pm to capture school commuting. Counts for a 'typical summer day' use a 12 hour period (~7 am to 7 pm) with hourly benchmarks.

Action: Install permanent counters at appropriate locations on critical bicycle links to count the number of bicycle riders using the network daily. This action includes implementation of the Bike St. John's Task Force Final Report recommendation to upgrade the T'Railway with automated usage monitoring equipment.

7.1.4 Intercept Surveys

Intercept surveys are conducted in-person to capture qualitative information from people who are bike riding along a specific route. The information collected can relate to usage, perceptions of safety, happiness, and biking confidence level.

- Bike ambassadors can potentially do these

7.1.5 Accident/Collision Data

Collision and injury data can be collected from the Royal Newfoundland Constabulary (RNC) and Eastern Health (e.g., emergency rooms). It is important to note that there tends to be

significant under-reporting of bike-related near-misses, injuries and collisions[41].

7.1.6 Facilities Completed/Installed

The progress of network completion should be monitored, comparing the quantity (number or distance) of infrastructure completed/installed to what is proposed.

7.1.7 Crowd-Sourced Mapping

- Self-reporting of collisions and near misses on Bikemaps.org
- Strava
- Voluntary crowd-sourced data is skewed towards representing a certain type of rider. Strava has analysis tools to compensate for that. Local

Quality of facilities

- Inventory of bike routes, looking for cracked asphalt, obstructions, etc.
- Is this already done for roads & sidewalks?
- Maintenance related

7.2 Strategy

Also goals or targets? (specific and measurable)

- increased ridership (10% of people will journey-to-work by bicycle?)
- a balance of genders will bicycle (50% women is simpler but less inclusive?)
- ## number of people (youth?) will participate in a bicycle program annually
- zero bicycle fatalities
- decrease crashes (number and severity) every year
- Full bike network build out, ## km
- ### of new bike racks installed annually

7.2.1 Increased Ridership

7.2.2 Existing Routes

First, usage along existing bike facilities in infrastructure, that is part of the Backbone Network should be monitored to see how cycling routes are currently performing. The T'Railway and the Prince Phillip Drive shared-use pathways are examples of established facilities for which count data for a 'typical summer day' should be collected. This data should be collected on an annual basis for comparison.

- Annual spot counts along existing backbone routes (T'Railway and the Prince Phillip Drive shared-use pathways)

7.2.3 New Routes

All counts should focus on the Backbone Network. Before completing the three Priority Projects, a baseline count should be

[41] Winters, M. and Branion-Calles, M. 2017. "Cycling safety: Quantifying the under reporting of cycling incidents in Vancouver, British Columbia." Journal of Transport & Health, vol. 7, part A, pp. 48 - 53. Accessed 10 March 2019. https://www.sciencedirect.com/science/article/pii/S2214140516303851

completed, with continued annual counts in the following years. As new segments of the Backbone Network are completed, they should be added to the suite of segments monitored.
Facilities already in place should continue to be monitored, to see if their usage changes as the rest of the network is constructed. If work is completed on the Connector Network, For routes not on the backbone network, monitoring should look to the Backbone Network for usage increases, as these connector segments will feed the Backbone Network. A number of small, automated trail counters should be installed at different locations along the Backbone Network to supplement manual counts.

- All new backbone route projects should include permanent automatic counters as part of capital costs. (projects identified in section #.#.#)
- New routes not on the backbone network should have regular spot counts (frequency?)
- Baseline measurements should be taken before any new route is constructed.

- **Grid Function.** To get a sense of how well the network is functioning, monitoring must take place along both east/west and north/south corridors.

7.2.4 Tying-in Educational Events

In Section #.# this plan recommends the City coordinate a Bike Month at the start of the summer. Each year, qualitative information on perceptions of safety and network satisfaction should be collected by intercept survey from attendees of programs and events.

7.2.5 Network Completion

The quantity of facilities constructed/installed should be tracked against the following total quantities of facility types proposed in this plan:

- ## km of shared-use paths through a natural corridor
- ## km of shared-use paths following a street corridor
- ## km of protected bike lanes
- ## km of traffic-calmed bike boulevards
- # multimodal hubs
- # bike corrals/lockers/individual parking

7.2.6 Network Safety

Monitoring that enhances network safety is dependent on gathering high-quality data.

In order to evaluate network safety, It is important to establish partnerships and collaborate with the RNC and Eastern Health (e.g., hospital emergency rooms) on how bike incident information is collected and reported. Another method for collecting this data is through residents reporting their incidents to 311, including the reason for the incident.

Research on bicycling injuries shows that motor vehicle collisions (including dooring and falling to avoid a collision) make up less than half (47%) of bike injury crashes. The other 53% of crashes resulting in injury are caused by surface texture, collision with a bike/pedestrian/animal or object, falls to avoid collision, or other falling. These factors should be kept in mind, informing preparation of biking incident data collection.[42]

[42] Harris M. A., Reynolds, C. C. O., Winters, M., et al. 2011. “The Bicyclists'

Action: The City of St. John's shall establish an script for 311 operators who receive incident reports from users of the municipal bicycle network. Residents shall be encouraged to report accidents and incidents to 311 in the interest of enhancing the performance of the bicycle network and the safety of users.

7.2.7 Reporting

The results of these monitoring efforts should be reported on an annual basis and published during Bike Month. When reporting this information, accurate and consistent presentation of data is necessary. It is important to note that spot counts along the Backbone Network only tell what people are doing in that particular section, and these sections should only be compared against themselves. Cordon counts permit discussion about what people are doing going into/out of a specific area.

City of St. John's staff shall prepare an annual report on bicycle use relying on data collected pursuant to the foregoing initiatives and supplemented by Census of Canada Journey to Work data in years when it is available. Where possible, the report shall assess the progress of the City in promoting bicycle use relative to other comparable jurisdictions.

The City of St. John's shall recognize property owners who make bicycle-friendly improvements in its annual bicycle report and shall record such facilities, where feasible, on bicycle network mapping and other user information pertaining to the City's bicycle network.

Action: Publish annual report card or yearbook

Injuries and the Cycling Environment study: a protocol to tackle methodological issues facing studies of bicycling safety" *Injury Prevention* 17:e6. Accessed 10 March 2019. https://injuryprevention.bmj.com/content/17/5/e6

Appendix # | Master Planning Process

The initial Inventory phase of the plan development process is composed of four layered platforms supporting the creation of the Bike St. John's Master Plan. The first platform is based on theory; it is a review of lessons learned from previous studies, plans, and reports. The second, Social Platform relates neighbourhoods' socio-economic information to geography, showing the relative demographics of neighbourhoods across the city.
Resident-supplied essential destinations are included as part of this neighbourhood analysis. The third platform identifies the Existing Bike Facilities located throughout the city, completed during the implementation of the 2009 Cycling Master Plan. When taken together, these three layers comprise the Platform for Moving Forward, the theoretical and physical starting position from which the Bike St. John's Master Plan is developed.

Inventory

Understand the existing network through background study and review of existing facilities.

Public Engagement

Used targeted stakeholder sessions, public open houses, Bike Fest, and online survey to learn:

- where and why do people currently ride bikes?
- what are the barriers and opportunities for cycling in St John's?

Vision & Draft Network

Based on public input and technical best practice, and in collaboration with the Bike St. John's Advisory Committee, a draft vision and bike network were developed.

Public Engagement

Committee of the Whole presentation, community drop-in sessions, and online survey.

Finalize Vision, Network and develop Action Plan

Validation of vision and refinement of a draft network in accordance with public feedback and best practice in network, facility, and program design.

Appendix #. Background Data and Reports Review

Review of previously completed plans and reports provides routes, operations, policy, and social context to the existing network of cycling facilities in St. John's. The Lessons Learned outlined in this section represent the first 'Platform' upon which the plan is developed. The important thematic takeaways common across these foundational documents inform the plan's vision and guide the approach to network design.

- Bike St. John's Task Force - Opinion Poll and Final Report (2017)
- MUN Area Traffic Study Decision/Direction Note (2017)
- St. John's Parks and Open Space Master Plan (2014)
- Envision St. John's Draft Municipal Plan (2014)
- Specifications Book (2011)
- CERS Assessment of St. John's Cycling Master Plan Proposal of Key Routes (2010)
- St. John's Cycling Plan Implementation: Risk Assessment (2010)
- Cycling Master Plan (2009)

Lessons Learned

Network Value and Safety

Routes and facilities proposed as part of the updated Bike St. John's Master Plan must be safe, relevant, and connected, providing a recognizable and realistic improvement to the city's bike network. The network provides value to St. John's residents by increasing the comfort for those who are interested in biking, and increasing the safety and convenience of those who are already confident or 'fearless' bike riders. The network must be connected seamlessly, with uninterrupted facilities along identified routes. These routes are connected to major trip generators, and have the potential to not only serve as a local attractions, but support ancillary tourism functions.

Prioritization of Bike Facilities Investment and Maintenance

The Cycling Master Plan (2009) asserts the need to prioritize the design and maintenance of cycling facilities in line with other forms of transportation. According to the CERS Assessment of St. John's Cycling Master Plan Proposal of Key Routes (2010), a master plan needs to be viewed as a long-term initiative which will require continued support and investment for as long as the infrastructure is present.

Improved Experience for all Users

The Envision St. John's Draft Municipal Plan (2014) speaks to the design and construction of new streets and the retrofit of existing streets, when appropriate, that incorporates the needs of pedestrians, people who bike, and persons with disabilities to create corridors that are safe, accessible, and comfortable for all users. People who bike, pedestrians, and people who drive share 'common ground' within the street and trail corridors; improvements to the cycling network enhances experiences for all users.

Considering the Commuter

The City of St. John's is home to a small, but passionate community of people who bike as their main mode of transportation. The 2016 Census reports that 195 residents (0.2%) bike as their main mode of commuting to work and that these people originate from diverse neighbourhoods within the city. According to a 2016 demographic survey of the St. John's CMA, 15.6% of St. John's residents surveyed report that they bike for transportation (destination/reason not specified) at least some of the time. These numbers do not capture the people who cycle for recreation, or do not presently cycle but have a latent desire to cycle dependent on improvements to the cycling network.

Relationship to Recreation

In addition to biking for transportation/commuting, past reports note resident desire for more routes facilitating recreational cycling, walking, hiking, and even cross-country skiing. This plan includes sections of the Grand Course in its Cycling Network. Upgrades to these sections of trail improve experiences for both people who bike and pedestrians. (e.g., accessibility). This plan also proposes the addition of new shared-use paths following natural areas, increasing options for people participating in active forms of recreation, and the network prioritizes connection with recreation facilities.

Integration with Transit

The integration of biking with public transit is especially strategic in St. John's given the city's unique topography, variable weather, and large area. Access to and links between the bus system and cycling facilities at multimodal hubs are important network components. The Envision St. John's Draft Municipal Plan (2014) reports investments in a new Metrobus depot and purchase of additional buses for the fleet; integration with an effective transit system receiving continued municipal investment will help overcome barriers related to topography, weather, and distance.

Addressing Social Barriers to Biking

A cultural shift making St. John's a more bike-friendly city is important to the success of the plan. The Bike St. John's Task Force - Final Report (2017) notes the need to foster a cultural change in attitudes toward people who bike. Likewise, the Cycling Master Plan (2009) recommends combating social barriers to biking through the implementation of educational programs and materials.

Social Platform

Similar to many other North American cities, more people are moving to St. John's suburban neighbourhoods while the population closer to the city centre shrinks. The spread of neighbourhoods across St. John's 166 sq. kms of land area means that important destinations where residents live, work, play, and learn are distributed throughout the city. More people are travelling farther, and without a safe, convenience, and comfortable biking network they are doing so by car.

To make a meaningful impact on the lives of residents, the bike network must tie into the Social Platform, using bike facilities and programming to reconnect people to major trip generators, as well as reconnect St. John's diverse neighbourhoods. A review of Census data provides insight into the social platform on which this master plan is developed.

A growing population

In 2016, the population of the City of St. John's was home to 108,860 people. The city's population has grown over each of the last three census periods, most recently increasing by 2.5% between 2011 to 2016.

An aging population

Within the City of St. John's there are 4,840 'babies' aged 0 to 4, 15,805 minors ages 5 to 19, 70,250 adults ages 20 to 64, and 17,970 seniors over the age of 65. The number of people in age groups over 55 is increasing significantly, with the two five-year age groups ranging from ages 65 to 69 and 70 to 74 increasing the most in size — each by over 20% between 2011 and 2016.

The Bike St. John's Master Plan must reflect the diverse requirements of and opportunities for bicycling that appeal to all age groups. The network should be flexible, designed for people of all ages and shifting demographics.

Neighbourhood Trends

2016 Census data shows that neighbourhoods toward St. John's centre tend to be smaller, denser, decreasing in size, have lower household median incomes, and are home to a smaller percentage of St. John's children. Neighbourhoods further from the city centre are some of the more populous, least dense,

growing, and wealthiest neighbourhoods in the city, home to some of the highest percentages of St. John's children.

The Cycling Network will connect these neighbourhoods seamlessly, supporting a more equitable transportation system that connects neighbourhoods with varying resources, age composition, and size.

Existing Network

Following Council's adoption of the 2009 Cycling Master Plan, the City of St. John's implemented a range of bicycle facilities: bike lanes, shared routes indicated by sharrows, signed routes, and shared-use paths. The locations of these existing facilities are shown in the adjacent map, Figure #.

Presently in St. John's there are very few on-street bike routes. During early implementation of the 2009 Cycling Plan, the City investigated concerns that the proposed on-street routes did not adequately improve the safety and comfort of people riding bikes. The new facilities failed to make less confident bike riders feel more comfortable and failed to add value for those people already confidently biking St. John's streets.

Separated from the street, but following the street corridor, the Prince Philip / Columbus Drive shared-use pathway extends from the intersection at Captain Whelan Drive / Columbus Drive to the intersection of Prince Philip Drive / Westerland Road. This is the only existing shared-use path following a street corridor.

St. John's is home to the Grand Concourse, an extensive trail network that connects the city's coasts, ponds, and rivers. The majority of this walkway is not open to bicycling. As per 2009 Cycling Plan recommendations, part of the Virginia River Trail (starting at Wedgewood Park and extending toward Windsor Lake) was opened to people riding bikes. The T'Railway is the other trail section in the city open to bike riding; it is part of The Great Trail (previously known as the Trans Canada Trail) and follows the former railbed starting at the Railway Coastal Museum. In this case, much of the physical foundation through natural corridors is already set; the opportunity exists in upgrading trails and updating programs and policy to support the bike network.

There is also a significant opportunity to upgrade appropriate and relevant segments of the existing walking trail network to meet a suitable specification that permits shared use between people who bike and pedestrians.

Platform for Moving Forward

The master planning platform is comprised of all three layers described in the preceding sections of this Appendix: Previous Works, the Social Platform, and the Existing Network. Together, they provide the social, geographic, and programmatic starting position from which the Bike St. John's Master Plan is developed. Moving into consultation, the integration of lessons learned, constraints, and opportunities identified through this platform analysis forms guiding principles and strategies that are key to the master plan approach:

Umbrella Strategy

A City of St. John's cycling network must be a safe, comfortable

and convenient series of meaningful links that is supported by appropriate infrastructure, activity and safety programs, and administrative policy.

Evolve from Within

The City presently hosts a series of trails developed for the purpose of moving on foot and, in some cases, on a bike. These trails provide an ideal starting position to expand resident activity and commuting opportunities by merely altering the physical characteristics of the trails.

Links

The evolving network must establish multimodal links between important city-wide destinations through the enhancement of existing and/or expanding mobility assets (trail, street and transit networks).

Recreation and Mobility

A St. John's bike network must function as both passive activity and commuting asset. The street and trail corridors enhanced for biking provides an opportunity for residents to recreationally bike as individuals, families, or in group formats. This approach to network enhancements supports opportunities to convert recreational bike riders into commuter bike riders; therefore, the network must support movement city-wide.

Equity

Network biking is an activity that must be available to all residents; therefore, physical and programmatic assets that support biking must, wherever possible, provide network access opportunities within all neighbourhoods.

Appendix #. Public Engagement

The public engagement process took a ground-up approach to plan building and was organized into two phases. During the initial phase, three core questions were considered:

1. Where are St. John's essential cycling routes?
2. What are St. John's essential destinations?
3. What are the physical and programmatic road bumps keeping St. John's from working for people on bikes… what are their solutions?

As the preliminary network and vision solidified in the later stages of the project, the focus of public engagement shifted to refining and prioritizing the facilities and routes making up the bike network, plan vision, and policy and program recommendations.

The results of public engagement are analyzed and used to create a single network of street and trail-based links. At its core, the network must achieve the resident-developed vision to ensure meaningful participation and shared opportunity to access combined recreational and commuter biking assets.

Public engagement was a vital component of the Bike St. John's Master Planning process. Planning for public engagement was guided by the City of St. John's public engagement framework policy and principles. An estimated 900 people participated through the various engagement formats.

Phase 1: Essential Destinations, Routes, and Road Bumps

- Invited Urban Cyclists' Session (September 5, 2018; 8 people)
- Bike Fest (September 14, 2018; face to face discussion engaged with about 100 of 1,000 attendees)
- City Hall Public Open House (September 17, 2018; 52 people)
- Student Sessions
    - ◊ Two elementary school sessions (September 18 and October 4, 2018; 20 grade 5 and 20 grade 6 students)
    - ◊ University session (October 3, 2018; 12 people)
- Survey #1 (236 responses)

Phase 2: Refining and Prioritizing Network and Vision

- St. John's All Advisory Committees Session (January 22, 2019; 21 people)
- Drop-In Community Sessions
    - ◊ Cowan Heights United Church (January 23, 2019; 45 people)
    - ◊ City Hall (January 24, 2019; 30 people)
    - ◊ Paul Reynolds Centre (January 25, 2019; 60 people)
    - ◊ St. John's Farmers' Market (January 26, 2019; 100 people)
- Survey #2 Public Engagement Questionnaire (January 22 to February 12, 2019; 449 people)

Phase 1 Results: Essential Destinations, Routes, and Road Bumps

The first phase of public engagement focused on resident feedback about essential destinations, routes, and 'road bumps' or challenges that kept them from biking or made it difficult for them to bike:

- Urban bike riders were invited to develop baseline mapping that described their 'well known' route corridors, as well as 'local knowledge' links and challenges.
- At Bike Fest approximately 1,000 people participated in a downtown festival during which part of Water Street was closed to cars. Important destination, route, and 'road bump' data was solicited from attendees.
- The public open house at City Hall included a fact-finding workshop focused on collecting resident input about essential routes, essential destinations, road bumps, and considerations for St. John's downtown.
- During classroom sessions, elementary school students shared where they go when they bike, who they go with, their purposes for biking, and explored the material and spatial criteria that should be applied to street and trail routes to achieve ideal comfort and safety.
- MUN faculty and students spoke to the needs of those travelling to and from the university, and the desire for university-led campus integration into the city network.

Over the same period of time that these consultation events occurred, residents were invited to complete an online survey capturing more specific, detailed information concerning essential destinations, routes, and road bumps. The adjacent infographic summarize the results of the 236 survey responses.

Survey #1

Phase 2 Results: Refining and Prioritizing Network and

Vision

The results of Phase 1 Consultation, considered in conjunction with network platforms, informed the creation of a draft vision and network. Following Bike St. John's Advisory Committee review, the draft vision and network were presented to a combined St. John's all-advisory committee session as well as the public during four drop-in community sessions located at Cowan Heights United Church, City Hall, the Paul Reynolds Centre, and the St. John's Farmers' Market.

Common Ideas

In addition to comments related to routing and destination, during the various public engagement formats, residents shared numerous programmatic insights that relate more to design, procedure, or culture than geography. These common ideas can be applied across the city network, evolving practice and perspectives to coincide with cycling infrastructure investment. The ideas are summarized in the adjacent figure X.

Survey #2

Like the first phase of consultation, more comprehensive resident feedback was gathered using a complementary public survey. In this survey, 449 residents commented on the proposed draft vision and indicated their preference for several alternative route options, bike facility types, and surface materials for shared-use paths. After analysis, this second phase of public input was integrated with other prioritization criteria to develop the final Bike St. John's Network. A copy of the survey is included on the following pages.

FAQ: Why Cycling

Throughout the public engagement process, residents frequently asked several key questions related to the broader question of "Why a bike network for St. Johns?". The following answers address these queries, responding to the desire for, benefits of, and potential for a bike network in St. John's.

Q: "Do the people of St. John's want this?"

- A: Yes. As part of their review of biking in St. John's, the Bike St. John's Task Force conducted a public opinion poll that received over 1,800 responses. In their final report, the Task Force concluded: "Residents of the City have a strong desire to see safe, comfortable, and convenient cycling facilities available to them."

Q: "Do people ride bikes in St. John's?"

- A: Yes. There are people living in all parts of the city who already bike for a variety of reasons. Some commute by bike, some ride bikes as transportation for other types of trips, and many ride bikes for recreation. There are also people who would like to bike but do not presently feel comfortable riding the existing limited and disconnected bike network. For example, St. John's first "Bike Fest" brought 1,000 people on their bikes to Water Street when that section of the street was car-free for the day. Once cities build protected bike lanes and/or separated shared-use pathways, bike ridership increases significantly.

Q: "Are bike facilities a worthwhile investment?"

- A: Yes. There is strong evidence that adding bike facilities contributes to the economic well-being of cities. Adding

bike facilities improves the performance of adjacent businesses[43], provides a cycling tourism attraction, and reduces overall spending on transportation infrastructure. Other benefits include the healthcare cost savings associated with having a more active population; the reduction of environmental costs associated with air pollution and greenhouse gas emissions; the reduced personal costs of not having to own a vehicle (or as many vehicles); and an increase in property values of homes located by trail systems.[44][45][46]

Q: "Is our weather too unpredictable for cycling?"

- A: No. There are many cities like Buffalo, Salt Lake City, Chicago, Cambridge, and Hamilton with extensive, well-used bike networks that overcome harsh winter weather challenges.[47] Prioritized winter biking facility maintenance and integrated transit hubs complete with protected bike storage are just two examples of strategies to establish a year-round biking season in St. John's.

Q: "Is our topography too difficult to bike?"

- A: No. Although St. John's has a lot of steep hills, there are many relatively flat routes. The east-west corridors follow the city's natural contours and do not require as much person-power. When travelling from the southeast to the northwest (e.g., out of downtown), this plan's network recommends routes that are less steep and provides for well-integrated transit hubs allowing people to "bike down, bus up." For example, the City of Hamilton offers a pilot program that allows people to secure their bike to a bus bike rack and take the bus up or down the escarpment for free, year round, at four designated stops.[48] Another option is electric-assist bikes (also called e-bikes), which increase the comfortable range a person riding a bike will travel and reduce the difficulty of riding uphill.[49]

Q: "Are shared-use paths safe for both pedestrians and people who bike?"

- A: Yes. Shared-use paths are designed to provide a safe environment for all; as such they often have a wider corridor, are paved, and/or have dividing lines. When

[43] Trottenberg, Polly. September 2014. "Protected Bike Lanes in NYC". New York City Department of Transportation. Accessed 13 February 2019. http://www.nyc.gov/html/dot/downloads/pdf/2014-09-03-bicycle-path-data-analysis.pdf

[44] Share the Road Cycling Coalition. "What are the Benefits to Government When They Invest in Cycling?" Accessed 13 February 2019. https://www.sharetheroad.ca/what-are-the-benefits-to-government-when-they-invest-in-cycling--p128284

[45] Suh, Jungho. "Chapter 6: Economics of Everyday Cycling and Cycling Facilities." Cycling Futures, edited by Bonham, J. and Johnson, M. 2015. University of Adelaide Press, pp. 107-130.

[46] Headwaters Economics. Spring 2016. "Measuring Trails Benefits: Property Value." Accessed 13 February 2019. http://headwaterseconomics.org/wp-content/uploads/trails-library-property-value-overview.pdf

[47] Buffalo Bicycle Master Plan Update. January 2016. Pp. 3-10. Accessed 13 February 2019. https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-13-51.pdf

[48] City of Hamilton. "Integration with Transit." Date modified 14 August 2018. Accessed 5 March 2019. https://www.hamilton.ca/streets-transportation/biking-cyclists/integration-transit

[49] Bruntlett, M. and Bruntlett, C. 2018. Building the Cycling City: The Dutch Blueprint for Urban Vitality. Island Press, Washington, DC.

sharing a path, all people using the space have responsibilities that maintain each others' safety. There are many best practices that help to minimize user conflict (e.g., maintaining an appropriate speed, using a bell, using lights at night, keeping dogs under control, being aware of more vulnerable users).[50]

Q: "Can the City require that bikes need licenses or insurance to operate, just like cars?"

- A: No. It is unlikely that the City of St. John's has the legal authority to introduce a licensing scheme for bikes, as driver licensing and vehicle registration is a provincial responsibility. Furthermore, requiring licensing of residents owning and using bicycles creates barriers to cycling, is expensive, requires creation of significant bureaucracy, is difficult to enforce, would require the licensing of children, and is an ineffective solution to the issues it tries to address (e.g., pedestrian safety, compliance with traffic laws, bike theft).[51] Toronto is an example of one Canadian city that used to do this (bylaw enacted in 1935), but repealed this requirement in 1957.[52]

Q: "Why is a new bike master plan being created?"

- A: The 2019 Bike St. John's Master Plan replaces the 2009 Cycling Master Plan. This master plan builds on the experience and branding of Bike St. John's, as well as the findings and recommendations of the Bike St. John's Task Force (2017). It is a long-term plan to guide cycling infrastructure and programming in St. John's.

From Consultation to Network Development

As mentioned in the previous sections, concepts gathered during community consultation contributed to the iterative development and refinement of the Bike Network. The first phase of consultation expanded understandings of where, when, how, and why people ride (or don't ride) bikes in St. John's. These initial opportunities for public engagement identified and located important destinations, potential routes, and challenges to be overcome. Phase 2 of consultation tested the draft vision and network, adding the dimension of public preference to route and facility evaluation. This public input was taken into account along with other route design considerations to determine the final network design, explained in more detail in Chapter 4.0 The St. John's Bike Network and Chapter 5.0 The Network Toolbox.

Appendix #. Essential Destinations

The people of St. John's live in varied neighbourhoods that have unique histories, identities, and socio-economic conditions. These neighbourhoods are home to important destinations for work, play,

[50]Sustrans. "Advice on using shared-use paths." Accessed 13 February 2019. https://www.sustrans.org.uk/what-you-can-do/cycling/cycling-safety-and-rules/advice-using-shared-use-paths

[51]Bike Calgary. "Licensing." Bike Calgary. Accessed 5 March 2019. http://bikecalgary.org/licensing/.

[52]City of Toronto. "Bicycle Licensing." Accessed 5 March 2019. https://www.toronto.ca/services-payments/streets-parking-transportation/cycling-in-toronto/cycling-and-the-law/bicycle-licencing/

and learning. The St. John's Bike Network prioritizes connections to these major trip generators, and the movement of people within and beyond their neighbourhood to the following essential destinations within the city (located on the adjacent map). Consideration is also given to eventual connection to regional destinations outside of city bounds.

Neighbourhood Destinations

- Green spaces and neighbourhood parks
- Grocery stores
- Ponds, lakes and rivers
- Schools

Community Destinations

- Churchill Square
- Lester's Farm Market
- YMCA of Newfoundland and Labrador
- Paul Reynolds Community Centre

Regional Destinations

- Arts and Culture Centre / AC Hunter Adult Public Library
- Avalon Mall
- Bannerman Park
- Bowring Park
- Confederation Building
- Downtown
- Fort Amherst
- Health Sciences Centre
- Memorial University of Newfoundland / The Works
- MUN - Signal Hill Campus / Accommodations
- Pippy Park / Three Pond Barrens
- Signal Hill
- St. Clare's Mercy Hospital
- St. John's Farmers' Market
- T'Railway - Trans Canada Trail
- Village Mall
- East White Hills

Essential Destinations outside St. John's

- Bay Bulls
- Cape Spear
- Conception Bay South
- Holyrood
- Marine Drive
- Mount Pearl
- Paradise
- Petty Harbour-Maddox Cove
- Portugal Cove-St. Phillip's

Appendix #. The Extended Network

The Extended Network map shows potential routes that are not prioritized as part of the 2019 Bike St. John's Master Plan. They connect to rural areas within the municipality and essential destinations located outside of the City's boundaries. These routes should be evaluated for implementation on a case-by-case basis when construction opportunities arise.

Appendix #. Envision St. John's Amendments

This appendix identifies text within the draft Municipal Plan that mentions cycling, corresponds with the priorities of this master plan (highlighted in yellow), and recommends amendments (underlined) to strengthen municipal policy commitments to cycling network development.

City of St. John's, Envision St. John's Municipal Plan, pp. 2-6 to 2-8

City Vision

The vision for the City of St. John's that emerged during public consultation for the Municipal Plan review is:

St. John's will have a future of continued economic prosperity and diversity, where citizens have a strong sense of identity and appreciation for their cultural, natural and built heritage and the arts. This city has active, healthy citizens, living in affordable, accessible, complete neighbourhoods. St. John's attracts and welcomes investment, residents and visitors from the region, the province, and around the world.

The growth and development strategy and vision of this Municipal Plan are consistent with the vision set out in City's Roadmap 2021: A Strategic Economic Plan for St. John's:

"St. John's is a vibrant city capitalizing on its energy, creativity and distinctiveness to embrace economic progress and enhance quality of life".

Key Themes

The vision of this Municipal Plan reflects five key themes which have emerged from the public consultation process:

- Valuing Environmental Systems
- Vibrant, Complete Neighbourhoods
- Strong, Diversified Economy
- Quality Neighbourhood Design
- Investment in Transportation and Services

The following sections outline the context for each of the key themes, identifying a set of goals, objectives and policies as presented in Chapters III to VII, which are also arranged according the key theme and support the City's overall vision.

Valuing Environmental Systems

The City of St. John's identified environmentally valuable waterways and wetlands in the reports in 1998 and 1993. Over the following decades, these areas have been maintained as an important component of the city's open space system. This Plan continues to protect the city's river and wetland systems and recognizes their important ecological functions.

Windsor Lake, Broad Cove, Petty Harbour Long Pond, Bay Bulls Big Pond and Thomas Pond, and their associated watersheds, are recognized and protected as the main sources of potable water for the city and the region. Continued protection of these watersheds facilitates long-term sustainability of the quantity and quality of the drinking water supply.

The City's Open Space Master Plan (2014) identifies and defines an integrated system of linked natural corridors, which encompasses a network of parks, trails, greenspace, waterways, wetlands and woodlands that will be incorporated and expanded through future developments throughout the city. Trails in these corridors are critical opportunities for development of active transportation links offering safety and amenity in unspoiled locations separated from the vehicle-serving road network.

The impacts of global climate change are being felt locally. More intense and more frequent storms are leading to expanding flood zones along our rivers and streams. The Plan recognizes the need to anticipate and adapt to climate change impacts. Lands within the city support a stable, prosperous agricultural industry. As concerns over availability of and access to locally produced food increases, the importance of protecting this finite resource becomes more important. Agricultural areas contribute to the city's open space, enhance the rural landscape and natural heritage areas by providing environmental benefits, and contribute to the local economy and food production.

Vibrant, Complete Neighbourhoods

Input from public consultations on the Plan indicate a desire for a city of healthy, walkable neighbourhoods with access to local services. There was also recognition that a greater mix of uses and higher density residential development will be required to support such initiatives. At the same time, there are concerns about how such development could be achieved and how it might affect established residential neighbourhoods.

Many of the City's neighbourhoods, with the exception of the downtown area, are traditionally low density, with consistent building size, height and lot size. Neighbourhoods change and evolve over time; therefore it is the City's intent to implement policies that maintain the essential character of the neighbourhood, while allowing appropriate growth and development. The City will re-invest in planning at the neighbourhood level to identify ways to improve the built environment for better mobility, access to goods, services, open space, employment and opportunities to increase the assortment of housing forms. New areas identified for development will be planned in a manner that provides for neighbourhood services within walking distance of where people live. This will be achieved through quality urban design, Complete Street planning, incorporation of active transportation infrastructure, and a mixture of housing forms, at densities that can support neighbourhood commercial services.

The City's goal is to increase the number of people who live and work within the city and to "re-capture" those individuals and families who have moved to suburban locations outside the city. This will be accomplished by improving the quality of residential areas and their accessibility to goods and services through mixed-use, pedestrian and bicycle-friendly commercial centres. The aim is to reduce traffic congestion, support transit, and improve quality of life in the city.

Sustainable communities have a range of housing choice so that people of all ages, abilities and incomes can find quality, affordable shelter. While the range of housing choices is expanding, further steps are required to address issues of affordability. By encouraging housing and employment opportunities in close proximity, the City will encourage higher

density, mixed-use development in areas identified for intensification along transit corridors.

Increasing the supply of affordable housing over the planning period is an important goal for the City. Policies have been developed to require new residential and mixed-use developments to include a variety of housing forms that are affordable to people with a range of incomes.

City of St. John's, *Envision St. John's Municipal Plan*, pp. 2-10 to 2-11

Quality Neighbourhood Design

The ability to achieve intensification and redevelopment that encompasses a mix of land uses within the built-up areas of the city requires high quality urban design. The City will use Secondary Plans for identified Planning Areas, and work with citizens to develop a community vision and specific guidelines to support the local development of attractive multi-use buildings, pedestrian and bicycle-friendly streets, parks, trails and public spaces. Areas identified for intensification in the city will be characterized by compact development that provides a variety of opportunities for working, living, and enjoying the local culture and recreation. Quality public spaces and pedestrian-friendly streetscapes will provide additional amenities. Care will be taken with the design of new buildings to provide appropriate buffers and design solutions to minimize the impact on adjoining established residential neighbourhoods. Opportunities for new retail and services will be provided for in areas identified for intensification.

In new neighbourhoods, development will be planned around the parks and open space network, with an emphasis on compact, walkable residential neighbourhoods, with a mix of uses and employment areas along primary transportation corridors. The city's Heritage Area (including the Ecclesiastical Precinct set out by the Historic Sites and Monuments Board) will continue to be protected under the new St. John's Heritage Bylaw. Residential districts in the downtown will be preserved to retain the blocks of row housing, streetscapes, laneways and public spaces that are unique to the city. Urban Design Guidelines will be prepared for commercial areas in the downtown, addressing such things as site specific parameters for height, bulk and form of buildings, as well as exterior design elements.

Investment in Transportation and Services

Since the 1970s when the regional road network was established, it has facilitated outward growth in the region. Today, that growth has placed pressure on regional roads and city streets. The City will work with the Province and the region's municipalities to review the regional network and develop a transportation plan to address regional transportation issues.

The St. John's International Airport is a critical piece of transportation infrastructure for both the city and the province. The City will work with the Airport Authority to ensure land use and development around the airport will not negatively impact operations so the airport can continue to provide service for the movement of people and goods to, from, and within the province.

The Port of St. John's also plays an important role in the city's transportation infrastructure, particularly as a gateway for the movement of goods to and from the province. Ensuring that the Port continues to have convenient access to the regional road network is a priority. Great streets make great communities. Complete streets are for everyone, and are designed and operated to enable safe use and access for all users; automobiles, pedestrians,cyclists and transit. The City will work towards improving the city street network to incorporate Complete Street

guidelines where major retrofits or new construction is underway. Within the city, investment in transportation and transit infrastructure will be directed to nodes and corridors targeted for intensification. In these areas, planning will emphasize complete streets that are walkable, safe, provide pedestrian access with adjoining neighbourhoods, cycling routes, and transit routes.New development areas will also be designed with these key initiatives. In the Downtown, improved transit service and other transportation demand management (TDM) techniques will be considered as a way to reduce the demand for downtown parking.

Over the next decade, the City will concentrate on upgrading and replacing aging municipal infrastructure. This will include improving the water distribution system to reduce leakages, upgrades to water treatment plants, the upgrading and where necessary the replacement of sewers, and addition of stormwater detention infrastructure. As infrastructure is upgraded or replaced, the opportunity will be taken to update any affected streets to improve walkability incorporate bicycle infrastructure and enhance overall connections.

City of St. John's, *Envision St. John's Municipal Plan*, 2016, pp. 7-2 to 7-6

CHAPTER 7 Transportation and Infrastructure

GOAL

Support growth and development in the City through an efficient and effective transportation network and investment in municipal infrastructure.

The provision of infrastructure is a key consideration in city planning. Municipal infrastructure – transportation networks, water and wastewater systems and treatment plants - are the underlying building blocks that support growth and livability of the city. How these services are planned and developed affects the daily lives of residents, as well as how and where new growth in the city can occur.

Within the city, efforts to integrate transportation planning and land use are needed to support more balanced mobility, while increasing alternative modes of transportation such as walking, cycling, transit and other innovations. The City's objective is to increase mobility options for all users by addressing the imbalance that exists, which emphasizes and accommodates the car. In some contexts, this will mean less vehicle access in favour of providing safer, more active and attractive streets.

Today, more and more cities are re-imagining the street as an important component of increasing mobility options. This can be accomplished by creating walkable streets surrounded by higher density, mixed-use development at key nodes along major transportation corridors, and ensuring that neighbourhoods are connected to these areas by the network of local streets, sidewalks, pathways, trails, bicycle links and transit service. The City recognizes the important role that transportation networks play in community building, and that streets are an important component of "place making."

Over the past decade, the City has undertaken a number of measures to improve stormwater management, wastewater collection and treatment throughout the city. Significant upgrades to water treatment plants at Bay Bulls Big Pond, Windsor Lake and Petty Harbour Long Pond have been undertaken, while significant efforts have also been taken to conserve water, including an analysis of the water distribution system to reduce leaks. Upgrades have been made to increase the capacity of the

storm sewer system to accommodate increased flows and to upgrade and maintain older sanitary sewers in the city.

Over the 10-year planning period, the City will focus investment on renewal and maintenance of existing infrastructure. At the same time, monitoring and planning for future needs will also be undertaken, particularly with respect to regional systems.

Strategic Objectives

- Support public transit through higher density development, mixed-use and supportive housing options along main transit corridors.
- Ensure that areas for urban expansion have transit supportive design.
- Update the 1998 St. John's Transportation Study.
- Participate with the region's municipalities to undertake a regional transportation study.
- Facilitate the creation of transportation networks that support and connect neighbourhoods, provide quality options for active transportation, integrate transit, and prioritize user safety.
- Focus infrastructure investment on the upgrading and replacement of aging infrastructure including water (potable water, wastewater, stormwater), recreation and streets.
- Ensure that urban expansion is carried out in a manner that does not add a financial burden to the city.

1. Work with other regional municipalities and the Province to undertake a Regional Transportation Plan that will:
    - Identify regional traffic patterns;
    - Include a regional traffic model for use in evaluating the impact of proposed developments on regional transportation and city street networks;
    - Evaluate the potential for increasing modal share of transit, walking, cycling and other means of transportation within the region as a means of reducing the reliance on the automobile as the primary mode of travel to, from, and within the City; and
    - Identify necessary improvements in the regional road network.
2. Protected Roads as identified in Appendix A, P-4 (Road Classifications) are designated by the Province for the purpose of controlling development within an established building control line, measured perpendicular from the centre line of the roadway 100 metres, and an application must be obtained from Service NL prior to any development being permitted within this defined area.
3. Scenic Roads, Appendix A, P-4 (Road Classifications), are designed for traffic and access, but were developed as leisurely routes, where the scenic potential is of a greater value, and any proposed development is subject to the policies of the St. John's Urban Region Regional Plan.

Transportation Network

The major roadway elements of the city's transportation network are identified in Appendix A, P-4 (Road Classifications). These include freeways, major and minor arterial roads, collector roads, local streets and protected roads. Over the planning period, emphasis will be placed on developing Complete Streets, where the emphasis is on the movement of people instead of vehicles, increasing safety for all users, and the creation of attractive streetscapes. Complete Streets will be achieved through new street standards for new development, as well as retrofitting existing streets as part of the city's ongoing capital works

programs. City streets will be completed by a network of active transportation links and transit service.

1. Revise standards for the development of new streets and rights-of-way, to improve the balance of safety, accessibility, convenience and comfort of all street users.

2. Ensure that lands are acquired through the development approvals process for required street rights-of-way, lands required for features such as intersection widening, bicycle infrastructure, transit infrastructure, improved sightlines, or other identified streetscape improvements.

3. Improve the city's transportation network in accordance with a new Transportation Master Plan for St. John's.

4. Encourage development that facilitates the potential for street and pedestrian connectivity. In new residential developments, the use of cul-de-sacs will be discouraged except for locations where there is a demonstrated need for a cul-de-sac to provide land access.

5. Develop and maintain a safe, inclusive, and convenient cycling network consistent with the Bike St. John's Master Plan and Appendix A,P-? (Cycling Network Plan).

6. Ensure that all transportation infrastructure is open to the public and remains in the public realm wherever possible.

Regional Transportation

As the City has grown, so has the city's street network. The regional road network, set out in a plan developed in the 1970s, will be completed with the final segment of the Team Gushue Highway. The regional road network provides convenient access into and out of the city, to the airport, the harbour, and major employment centres. It has also facilitated the growth of communities beyond the city's boundaries. Within the region, travel modes are almost entirely auto-dependent, resulting in increasing traffic on highway arterials and major collector streets within the city. Transportation planning at the regional level requires collaboration between the region's municipalities and the Province to address growing regional traffic issues and impacts on the city. Solutions need to focus on moving people, as opposed to vehicles.

Active Transportation

7. Work with schools, the University, Colleges and private educational institutions to provide alternatives to car travel by improving conditions that encourage students to travel to school on foot, by public transit or by bicycle. Implement a network of safe, comfortable and convenient cycling facilities consistent with the Cycling St. John's Plan.

8. Create a more pedestrian-friendly environment that is inter-connected by a network of accessible, safe, comfortable and convenient routes.

Parking

9. Establish parking standards that:

   - Address requirements for parking in areas identified for intensification;
   - Permit reduced levels of parking in new mixed-use development projects where shared parking among compatible uses is possible and desirable;
   - Address the design and placement of off-street parking and loading facilities for delivery vehicles; and

- Include provisions for bicycle parking areas and facilities.

10. Require that the planning and design for parking in large, commercial and mixed-use developments incorporate measures that facilitate the safe movement of pedestrians within and between retail sites, including the provision of appropriately sited facilities to support transit.

11. Encourage design and construction of parking facilities including parking lots and above-grade parking garages or other parking structures that enhance the visual quality of the streetscape and are pedestrian friendly and reflect the human scale.

12. Work with owners of private parking facilities to provide public parking during nonpeak hours.

13. Develop active transportation infrastructure and work with Metrobus and major employers in the city's employment centres to develop measures to reduce the demand for all-day commuter parking, particularly in the downtown.

Development

14. Create Transportation Impact Assessment Guidelines for the creation of new transportation infrastructure required to support new development.

15. Require new development to anticipate and implement traffic calming measures consistent with the principles and objectives of the City's Traffic Calming Policy, so that proactive measures can be applied before traffic problems arise.

16. Encourage the design and construction of new streets and the retrofit of existing streets, where appropriate, that incorporates the needs of pedestrians, cyclists, and persons with disabilities to create a transportation network that is accessible, safe, comfortable and convenient for all users.

Intensification Nodes and Corridors

Key nodes and corridors provide focal points for neighbourhoods and connections between different areas of the city. Increased density, a mix of uses and multimodal connectivity establish these areas as vibrant parts of our community.

17. Develop a system of nodes and corridors through the city that will be linked by transit service, active transportation facilities and streets.

Public Transit

The City recognizes the role that an efficient public transit system contributes to personal mobility and health of residents. Increasing ridership both within, and to and from the city, is one way of reducing the number of personal vehicle trips and the number of vehicles on city streets. Investment in the Metrobus transit system has been made in the development of a new bus depot on Messenger Drive and purchase of additional buses for the fleet.

1. Increase ridership on public transit by the following means:
   - Work closely with Metrobus on transit supportive planning;
   - Improve transit infrastructure to support an efficient and effective transit service;
   - Provide increased development density and a mix of land uses in identified areas along main transportation corridors and nodes;

- Reduce parking requirements that take advantage of alternate travel modes;
- Work with the region's municipalities to develop park-and-ride lots in appropriate locations to encourage ride sharing and transit use;
- Continue to support a regional ParaTransit service; and
- Support Traffic Transportation Demand Management (TDM) policies.

Appendix #. Specifications Book (2011) Updates

ITEM XXX

CYCLING FACILITY DESIGN

X.01 DETAILED DESIGN REFERENCE

Cycling facility design occurs in both on and off-street settings. Sample components include the shared-use path, the Traffic Calmed Bike Boulevard, the Protected Bike Lane as well as contextually appropriate intersection and crossing design approaches. This master plan illustrates the varied route types and approaches to component design based on the varied locational contexts.

General specifications are provided for the shared-use path for excavation, trail construction and apron remediation. All other components are to be designed relative to the 2019 Bike St. John's Master Plan as well as Transportation Association of Canada (TAC) documents for Geometric Design Guide for Canadian Roads and the Bikeway Traffic Control Guidelines for Canada (latest editions).

ITEM XXX

shared-use path EXCAVATION

X.01 SCOPE OF WORK

The work to be done consists of the construction of subgrade for shared-use paths located within street right-of-ways, or within natural corridors. shared-use path excavation for the purpose of creating a new trail or renovating an existing trail may form part of a street renewal, new street or trail-only construction contract.

The bottom of all excavation and the top of all fill, when completed, shall be known as the subgrade and shall be true to lines and grades as set by the Engineer or Landscape Architect. Excavation and fill are to be made in all cases to such a depth that the compacted subgrade shall be at the required depth below the elevation of the finished trailway.

X.02 CLASSIFICATION

These are the classifications of relevant excavation unless otherwise noted:

A. Unsuitable Material (USM) - shall be all excavated material (other than solid rock) which is unsuitable to be placed in the subgrade.

X.03 STRIPPING

All topsoil on the streets or natural corridor and the area which will be cut or filled shall be removed and stockpiled at an Engineer of Landscape Architect approved placement for use in trail's edge reinstatement or other landscaping as approved by the Engineer or Landscape Architect. The depth of allowable materials to remain will be determined by the Engineer or Landscape Architect prior to excavation. All materials excavated below the approved depth will be retained and stored as per above for use as fill where approved by the Engineer or Landscape Architect. All non-used fill materials will be treated to the section X.05 requirements (note: this section).

X.04 BLASTING

The Contractor shall design a blasting pattern for solid rock so that the blasted rock will meet the requirements of Item 322.02(b) - Rock Borrow.

X.05 OTHER MATERIAL CUTS

Where the work is in cut the Contractor will be generally expected to excavate material to the true surface of the subgrade. Should the Contractor excavate below the true surface of the subgrade he shall place and compact other material as necessary to restore the excavation to subgrade. There shall be no payment for this work except where unsuitable material is excavated below the subgrade.

The Contractor shall remove stones larger than 150mm in greatest dimension from the top 300mm of sub-grade.

X.06 ROCK CUTS

All rock cuts shall be excavated and mucked out fully to 300mm below sub-grade. In rock cuts where pockets, which will not drain, are formed below the sub-grade by blasting, the contractor shall, at his own expense, provide drainage by ditching to a free outlet, as ordered, and then backfill and compact to 95% of Proctor Density both the pockets and the trench to an elevation of 300mm below subgrade. Backfill material shall be broken rock or coarse gravel.

Back slopes shall be carefully scaled down and all rock and fragments, liable to slide or roll down the slopes, removed to the satisfaction of the Engineer or Landscape Architect.

X.07 FILL

Where fill material is required to raise the embankment to the proper subgrade elevation such material shall be obtained from surplus excavation and excavated rock meeting requirements of Item X.03 (note: this section).

The Contractor shall remove unsuitable material as directed by the Engineer or Landscape Architect. No fill material shall be placed until the area to be filled has been approved by the Engineer or Landscape Architect.

On no account will the Contractor be allowed to construct a core through the fill and complete the fill by side dumping.

Fill material shall be deposited and spread in non-compacted layers not exceeding 500mm for the full width of the fill, except that the Engineer or Landscape Architect may order this thickness reduced, if such thickness does not respond to compaction methods.

The thickness of each successive layer shall be maintained uniform for the full width of the fill.

All stones larger than 150mm in greatest dimension shall be removed from the material comprising the top 300mm of the fill.

The moisture content of the material in the embankment shall be controlled at all stages of construction by ensuring that the top surface of each layer of fill material is suitably compacted and sloped with a cross-fall not to exceed 5% in order to shed surplus rain water.

Material shall be compacted to 95% Standard Proctor Density.

If the moisture content of the material is deficient, the Contractor shall add sufficient water to obtain the necessary compaction. The water shall be placed in controlled amounts and added uniformly. The placing of water shall be considered as included in the unit price bid for "shared-use path Excavation".

X.08 RE-USE OF EXCAVATED OR BLASTED ROCK

Excavated and/or blasted rock may, at the determination of the Engineer or Landscape Architect, be re-used as part of landscape reinstatement for surface retention or beautification purposes. Where required, the contractor will store hand-selected rock for these purposes at contractor cost.

X.09 DISPOSAL OF SURPLUS MATERIAL

All surplus material is to be legally disposed off the site and at a pit provided by the Contractor.

X.10 REMOVAL OF OBJECTS ABOVE GROUND LEVEL

Unless otherwise provided for by a separate pay item, the Contractor shall be deemed to have included in his bid price for shared-use path Excavation the removal and disposal of trees, shrubs, hedges, fences, signs, boulders, and any or all other objects that rise above the original ground level.

X.11 REMOVAL OF EXISTING ASPHALT AND CONCRETE WORKS

Unless otherwise provided for by a separate pay item, existing asphalt and concrete works which are to be removed shall be classified as "shared-use path Excavation" (USM).

X.12 FILL ADJACENT TO STEEP SLOPES

Where new fill is to be placed adjacent to an existing steep slope or embankment, the Contractor shall, concurrent with the

placement of new fill, bench the existing slope as described herein to provide proper bonding of new work to existing.

Each bench shall be 2 metres in width, and at the same height above original ground (or above the next bench below it) as the thickness of the adjacent layer of new fill, such that the bench forms a 2 metres wide extension of the new fill layer into the existing slope.

Material cut out of the existing slope shall be placed in the fill area and compacted.

ITEM XXX

shared-use path CONSTRUCTION

X.01 SCOPE OF WORK

The work to be done consists of the supply and placement of specified base granular material and asphalt surfaces for the construction of a shared-use path within street right-of-ways.

X.02 SPECIFIC MATERIAL ONLY COMPLIANT SECTIONS

At a minimum, the following Items directly relate to the sections described in this Item. All other Items will relate where required by contract specification (ie. drainage, structures, etc).

ITEM 332 - GRAVEL FOR STREETS

ITEM 325 - SCARIFYING AND RESHAPING GRAVEL SURFACES

ITEM 351 - HOT MIX ASPHALTIC CONCRETE

X.03 MATERIALS

All materials shall be supplied and placed by the Contractor to specified requirements.

A. Granular sub-base and base material shall be pit run gravel meeting the requirements of Item 332 - Gravel for Streets. For shared-use path purposes, base granulars shall be 0-31.5mm crushed rock.

B. Asphalt concrete paving shall be Base and Surface Course supplied and placed as per Specification 351.

X.04. GENERAL

It is the sole responsibility of the Contractor to become familiar with and understand the nature and extent of all work to be executed, and well as the nature of all soil, surface water drainage and the general form of the surface of the ground. More specifically to natural corridors that often border residential and other private property, the contractor must understand all physical and cultural aspects of all matters which can in any way influence the works to be undertaken in completing works. It is the sole responsibility of the contractor to understand this context to, as much as possible, limit visual and noise impacts and to ensure no physical impacts on adjacent properties.

X.05. LAYOUT

shared-use paths shall be constructed to the lines and grades in accordance with the location and typical cross-sections. For shared-use paths located within natural corridors or any areas not aligned with a street or highway corridor, the contractor will stake linear trail centre lines at a maximum of 100-meter intervals as well as all significant on trail positions or radii that influence the general shape and location of the trail relative to its surroundings. The Engineer or Landscape Architect shall determine all stake location requirements prior to contractor stake installation. All staked locations will be approved by the Engineer or Landscape Architect prior to location and elevation survey (to be provided at the cost of the contractor). All surveyed points will be provided to the Engineer or Landscape Architect for confirmation prior to any site excavation.

All stake supply and installation shall be supplied and installed at the cost of the contractor and will require both wood and metal stake materials contingent on location. Contractors are required to restrict all site access to specification to ensure injury prevention or stake damage within all project limit of contracts.

X.06 GRANULAR shared-use path BASE

All shared-use path base, unless otherwise specified, shall be 300mm Aggregate Base as per compliant Items and the Typical Cross Section. Depth to be determined during detailed design. A layer of pit run gravel may be applied under the Aggregate Base material, if required.

X.07 ASPHALTIC CONCRETE shared-use path SURFACE

All shared-use path, unless otherwise specified, 50mm shall be asphalt concrete, Base Course, and 25mm shall be asphalt concrete, Surface Course. Applying Asphalt Concrete as per Compliance Items and the Typical Cross Section.

X.08 FAULT OR REPLACEMENT

Where ravelling, shoving or other fault develops in the pavement as laid, all materials where indicated by the Engineer or Landscape Architect shall be removed, the edges of the joints cut square and painted with tack coat and fresh asphalt applied and compacted at the full expense of the Contractor.

X.09 PAYMENT

A. Measurement. The work shall be measured in lineal metres of asphalted trail.

B. Payment. Payment shall be made at the respective unit price bid for each linear metre of material constructed trail. Payment shall be made in full for all labour, equipment, and material necessary for excavation, supplant and placement, and compacting materials to fill sub-base, base, and trail surface areas, as well as edge and/or disturbed area remediation shall be considered included in the unit price bid for excavation.

ITEM XXX

shared-use path EDGE AND DISTURBED AREA REINSTATEMENT

X.01 SCOPE OF WORK

All areas within the limit of contract and all construction adjacent areas affected in any way by the Contractor's operations shall be restored to their original or better condition, as per Division 5. All properties within or adjacent to the construction area affected by the Contractor's operations shall be restored to their original or better condition immediately after completion of the work or any consecutive portion of the work as determined by the Engineer or Landscape Architect. The Contractor shall remove from the site all unused material, refuse and placed dirt, on or in the vicinity of the work, and leave the site in a neat and clean condition.

X.02. GENERAL

The contractor is required to establish a suitable turf apron to the dimensions described on the typical cross-section, or to contract documents and specifications. For all natural corridors, the apron will be a seasonally maintained turf or planted surface. Areas where natural planting is not required will conform to contract specifications.

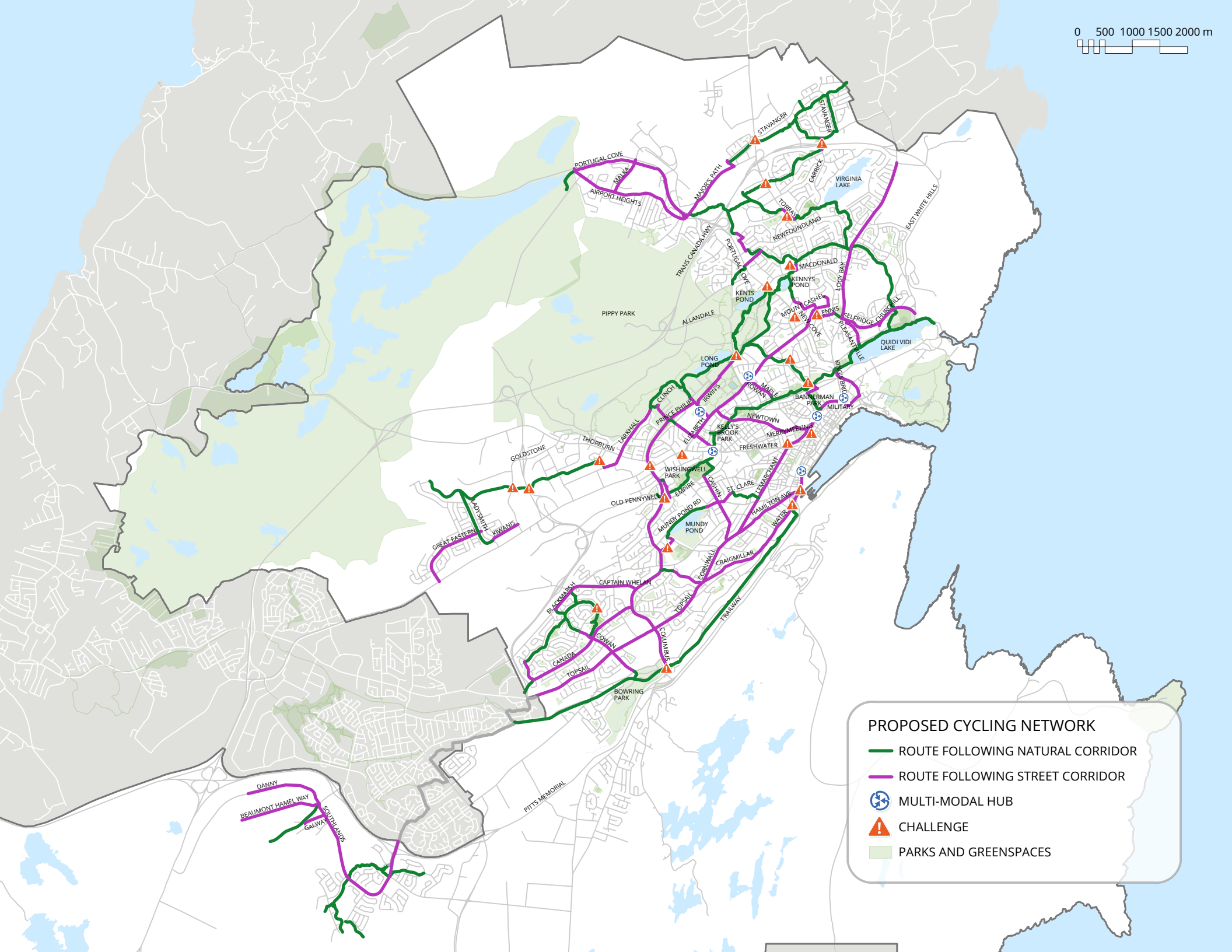
X.03 shared-use path PLANTED TURF APRON MATERIALS

All materials shall be supplied and placed by the Contractor to specified requirements.

A. For shared-use path aprons, topsoil shall be as per specification and will be a friable loam that shall contain a minimum of 4% organic matter for clay loams and 2% for sandy loams to a maximum of 20% by volume, and having a pH of 6.0 to 7.0. Topsoil shall be free of admixture of subsoil, refuse, roots, stumps, sod, and stones larger than 20mm. Contractor to provide a sample of all topsoil materials as well as structural and chemical composition testing results to the Engineer or Landscape Architect prior to supply and installation.

B. For Shared-Use Path aprons, Hydraulically applied turf seed mixtures shall be Canada #l lawn grass mixture to Government of Canada Seeds Regulations having a minimum germination of 75% with a purity of 95%.

C. The grass seed mixture shall be 245 kg/ha and shall include 40% Creeping Red Fescue, 20% Hard Fescue, 15% Canada Blue Grass, 10% White Clover, 10% Annual Ryegrass and 5% Red Top. Percentage are ‘by-weight’ measures.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PROPOSED CYCLING NETWORK
ROUTE FOLLOWING NATURAL CORRIDOR
ROUTE FOLLOWING STREET CORRIDOR
MULTI-MODAL HUB
CHALLENGE
PARKS AND GREENSPACES
STAVANGER
PORTUGAL COVE
MALKA
AIRPORT HEIGHTS
MAJOR'S PATH
CARRICK
VIRGINIA LAKE
TORBAY
NEWFOUNDLAND
EAST WHITE HILLS
TRANS CANADA HWY
PORTUGAL COVE
MACDONALD
KENNYS POND
LOCH BAY
KENTS POND
MOUNT CASHEL
ENNIS
SELFRIDGE
CHURCHILL
PIPPY PARK
ALLANDALE
NEW COVE
PLEASANTVILLE
QUIDI VIDI LAKE
LONG POND
ROWAN
MABLE
KING'S BRIDGE
BANNERMAN PARK
MILITARY
CLINCH
IRWIN'S
PRINCE PHILIP
NEWTOWN
ELIZABETH
KELLY'S BROOK PARK
MERRYMEETING
THORBURN
LARKHALL
FRESHWATER
GOLDSTONE
WISHINGWELL PARK
EMPIRE
CASHIN
ST. CLARE
LEMARCHANT
OLD PENNYWELL
HAMILTON AVE
WATER
MUNDY POND RD
MUNDY POND
LADYSMITH
KIWANIS
GREAT EASTERN
CORNWALL
CRAIGMILLAR
CAPTAIN WHELAN
BLACKMARSH
TOPSAIL
TRAILWAY
CONAN
COLUMBUS
CANADA
TOPSAIL
BOWRING PARK
PITTS MEMORIAL
DANNY
BEAUMONT HAMEL WAY
GALWAY
SOUTHLANDS