ST. JOHN'S



BIKE ST. JOHN'S MASTER PLAN

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trace
NATURAL ENVIRONMENTS | BUILT ENVIRONMENTS

Stantec

The Planning Partnership

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BIKE ST. JOHN'S MASTER PLAN

The City of St. John's is committed to enabling and encouraging more people to ride a bicycle by 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.

ABOUT THIS DOCUMENT



Chapter 1 provides context, an overview of the plan development process, and an exploration of Bicycle Network benefits.

Chapter 2 presents the City of St. John's vision, supporting goals, and overarching targets.

Chapter 3 presents the Bicycle Network. It includes discussion of network design considerations and outlines recommended route facility types and amenities, wayfinding design, and maintenance practices.

Chapter 4 considers programming for education, encouragement, and enforcement.

Chapter 5 reviews existing local and provincial policy and recommends amendments to support implementation of this plan.

Chapter 6 introduces evaluation methods; proposes a strategy to monitor bicycle network use, safety, user satisfaction, and completion; and recommends regular reporting.

Chapter 7 provides an action plan outlining several categories of actions identified as well as network hierarchy, route prioritization and cost estimates.

BIKE ST. JOHN'S MASTER PLAN

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EXECUTIVE SUMMARY

St. John's City Council commissioned the Bike St. John's Master Plan in 2018. This plan replaces the 2009 Cycling Plan, builds on the branding and experience of Bike St. John's, and fulfills a Bike St. John's Task Force Final Report (2017) major initiative.

Significant public engagement between September 2018 and February 2019 was vital to the plan development process. The following vision for cycling in St. John's comes out of extensive input from residents and was endorsed by the Bike St. John's Advisory Committee. The City of St. John's is committed to enabling and encouraging more people to ride a bicycle by 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 following four goals interpret how the vision is translated into the master plan's actions, projects, performance measures, and project prioritization. They are reflected in the structure of the master plan report.

INFRASTRUCTURE: Build and maintain cycling infrastructure that is inviting for people of all ages and abilities.

PROGRAMS: Develop a cycling-friendly culture with encouragement, education and enforcement.

POLICY: Adopt policies and a legal framework that support a vibrant cycling environment.

EVALUATION: Monitor and assess progress of network implementation against the following key targets:

- *Increase the number of people choosing to cycle in the City of St. John's.*
- *Create a cycling environment that is welcoming to all, so that the people choosing to cycle are proportionally representative of city demographics.*
- *Implement new sections of planned infrastructure each year (i.e., kms of new facilities constructed).*

This plan recommends a Bike Network that represents a set of comfortable, connected, convenient, and attractive bicycle routes serving the vision of this plan. Within the full network, a subset high priority backbone network is identified that supports commuter needs, along with recreational and social experiences. Three Catalyst Projects will launch implementation, providing valuable bike route improvements for people of all ages and abilities:

- Kelly's Brook Trail (Kings Bridge Road to Columbus Drive)
- Rennie's River Trail (proposed Kelly's Brook Trail at Portugal Cove Road to Prince Philip Drive)
- Virginia River Trail (Quidi Vidi to Penny Crescent).

All actions identified to translate master plan discussion into specific tasks are organized into an Action Plan table with associated lead departments and resources. They are sorted into four categories: primary, secondary, ongoing, and external actions.

1.0 A BIKE MASTER PLAN FOR ST. JOHN'S

The Bike St. John's Master Plan guides the collective efforts of partnering governments, organizations, businesses, and residents to enhance opportunities for cycling in the City of St. John's. It identifies a network of cycling facilities, supported by recommendations for:

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

The master plan is the product of a collaborative process, during which the consultant team engaged with the community and 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 cycling in St. John's and provides an action plan that establishes a roadmap to achieve this vision.

In order to achieve the vision outlined in this master plan, city investments in cycling facilities need support from both public and private efforts to help develop a bike-friendly culture. As a long-term plan it is expected that infrastructure will be implemented over many years as opportunities arise and funding is allocated.

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 did not proceed beyond the initial phase of implementation.

In 2015, Council requested the creation of the Bike St. John's Task Force to evaluate the state of the 2009 plan and advise City Council 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 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

1.2 PLAN DEVELOPMENT PROCESS

Extensive input from residents was essential to understanding the successes and constraints of the existing network, developing an overarching vision for the future of cycling in St. John's, and refining a draft network. Figure 1, below, illustrates the master planning process.

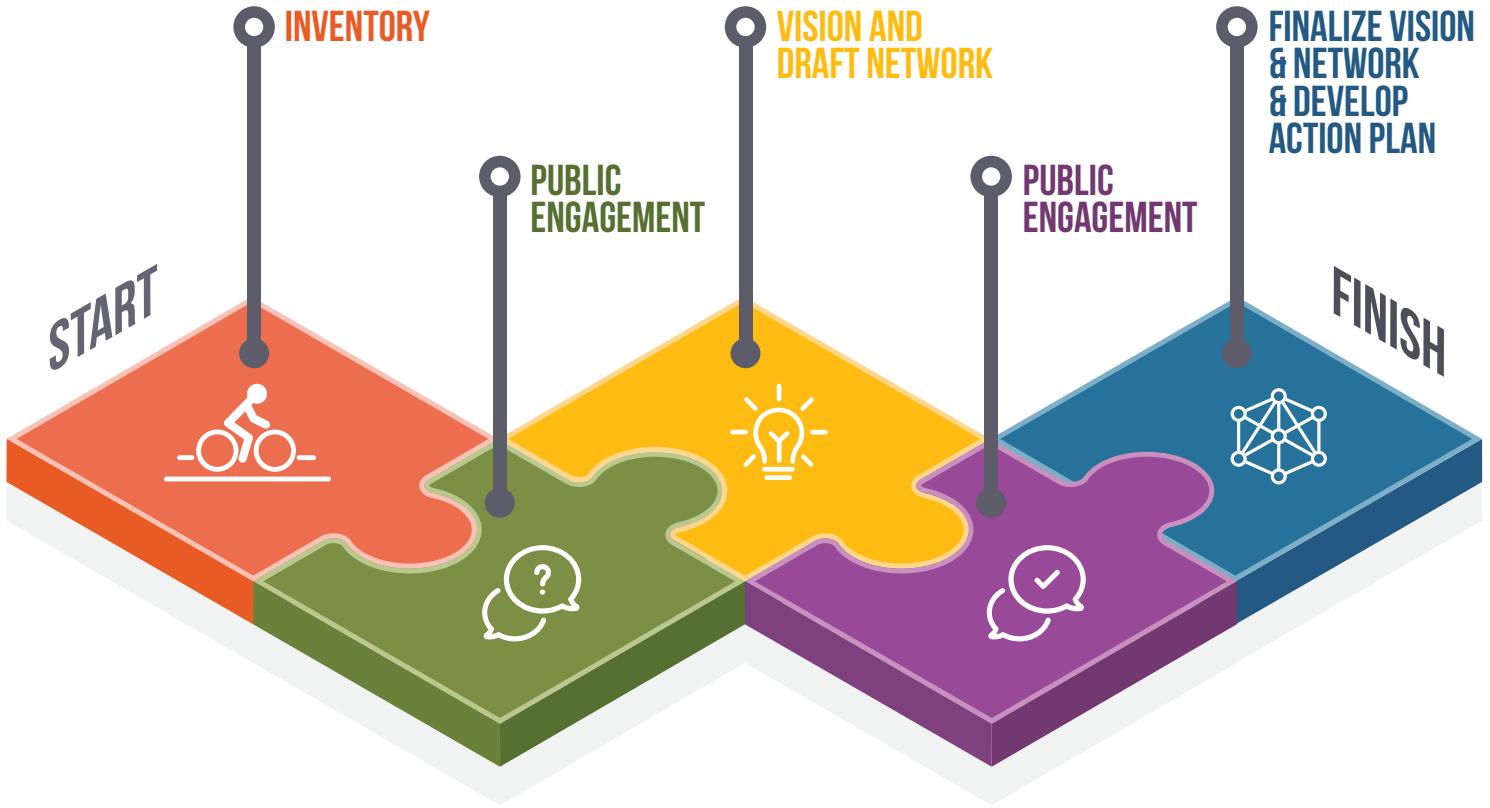


FIGURE 1 | PLAN DEVELOPMENT PROCESS

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

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 2.

WHAT DO PEOPLE WANT?

ENGAGEMENT FEEDBACK SUMMARY

Based on what was heard through engagement events, online surveys and the Bike St. John's Advisory Committee, here are the most common themes and ideas used to guide the development of the Master Plan.



FIGURE 2 | ENGAGEMENT FEEDBACK SUMMARY

1.3 WHY IMPROVE CYCLING IN ST. JOHN'S?

There are many compelling reasons why more and more cities are investing in cycling. By developing an environment where more people in St. John's feel comfortable cycling, the City will also benefit from these many advantages:

- ***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%)2. There is an inverse relationship between obesity and active transportation.3 Improving active transportation infrastructure impacts obesity outcomes4 and cycling reduces the likelihood of obesity5. In addition, Newfoundland and Labrador has the most rapidly aging population in Canada. Living a more active lifestyle is very important for healthy aging.[6]
- ***Environmental Responsibility.*** In Newfoundland and Labrador, greenhouse gas (GHG) emissions per capita are 4% higher than the Canadian average.[7] 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).[8] Between 2009 and 2016, Newfoundland and Labrador household transportation emissions increased by 40.9%.[9] Reducing motor vehicle trips helps mitigate climate change through the reduction of GHG emissions.
- ***Livable Streets.*** When more people bike instead of drive, there are fewer cars on the road, reducing traffic and congestion on city streets. Physically separated bicycle facilities reduce risks for people bicycling[10] and when more bicycle infrastructure is available, people perceive bicycling to be safer.[11] There is also safety in numbers; as more people bike, there are proportionately fewer cycling accidents[12] and the rates of collisions with motor vehicles decrease.[13] Livable streets are vibrant, attractive, safe, and welcoming to all people, whether walking, rolling, cycling, or driving. These characteristics support a dynamic economic and social environment, encourages use by the entire community, creates a strong sense of place, and fosters community pride.

2 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

3 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.

4 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

5 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

6Provincial Healthy Aging Policy Framework and status report.

7 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

8 "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

9 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

10 Wegman, F., Zhang, F., Dijkstra, A. 2012. "How to make more cycling good for road safety?" Accident Analysis & Prevention, 44 (1), pp. 19-29. Accessed 29 March 2019. https://www.sciencedirect.com/science/article/abs/pii/S0001457510003416

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

» ***Government Cost Savings.*** The government savings associated with more people cycling outweigh the costs of investing in bike facilities. Cost-benefit analysis has estimated that a $1 investment in cycling saves the government $14.[14] Shifts to walking and bicycling from urban driving is estimated to save 3¢/km traveled in urban roadway infrastructure and traffic service costs.[15] In terms of healthcare costs, it is estimated that in Canada the economic costs of physical inactivity are $5.3 billion and obesity are $4.3 billion.[16]

» ***Personal Financial Benefit.*** Investing in bicycle facilities makes city transportation more equitable. Overall, transportation accounts for 19.9% of household spending on goods and services in Canada.[17] Spending on transportation is disproportionately high among low- and moderate-income families. For these households, cycling is an affordable option when cities invest in active transportation and public transit.[18] For example, driving costs on average $9,000 annually including fuel, maintenance, and insurance.[19] A year of Metrobus passes costs $936[20]. Alternatively, the operating costs of regular cycling are on average $308 annually.[21] While cycling can not replace all types of trips it can reduce the need for vehicle ownership and be used as part of an integrated mobility network.

» ***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.[22] Retail sales have been shown to increase for businesses located by bike lanes, compared to similar streets without.[23] 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 number of bike routes that are comfortable not just for commuting and transportation, but also for leisure and 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 for shorter trips and complementary with public transit for longer trips. In cities with more bike infrastructure, cycling is often the fastest and most convenient option.

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 Ibid.

16Katzmarzyk P and Janssen, I. 2004. "The economic costs associated with physical inactivity and obesity in Canada: an update." Can J Appl Physiol, 29, pp. 90-115. Accessed 26 March 2019.

17Statistics 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

18 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

19 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

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

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

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

23 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

1.4 UNDERSTANDING LOCAL NEEDS

Areas with denser population and/or destinations both demand and support more cycling. Like many North American cities, more people in St. John's are moving to outer, suburban neighbourhoods while the neighbourhoods with higher population density, closer to the city centre, are experiencing population decline. The overall population density of St. John's is 244 people per sq. km; however the population density of its neighbourhoods vary widely, ranging from 25 to 5,328 people per sq. km.[24] Figure 16 in Appendix B illustrates the relative population densities across city neighbourhoods, as well as their % change in population from 2011 to 2016. The city's densest neighbourhoods are clustered more centrally in a swath extending from southwest (border of Mount Pearl) to northeast (Outer Ring Rd. W./Trans Canada Highway). Among these denser neighbourhoods, those located at the city centre, closer to the harbour, have the highest population densities in St. John's (4,055 and 5,328 people per sq. km). Areas with higher total household incomes and higher percentages of the city's youth population are generally located further from the city centre, in neighbourhoods with lower population densities.

The spread of neighbourhoods across the 166 square kilometres of land in St. John's means more people are traveling farther to important destinations where they live, work, play, and learn. The City of St. John's 2016 Demographic Survey, reports that 89% of people working in the St. John's Census Metropolitan Area commute by automobile.[25] Even though at least 15% of households in St. John's ride a bicycle at least sometimes[26], less than one percent of people in the City of St. John's ride a bicycle as their main mode of commuting to work.[27] There is great potential for St. John's commuters to transition from car trips to bicycle trips; 59% of people in the city commute less than 5km[28], a distance typically covered by a 15 minute bicycle ride. Despite the population spread, most people still commute very short and bikeable distances.

The Bike St. John's Master Plan strives to connect the varied neighbourhoods that make up St. John's, supporting a more equitable transportation system that connects neighbourhoods with varying densities, resources, age compositions, and sizes. Reflecting the diverse requirements of and opportunities for bicycling in St. John's, the cycling network is meant to serve people of all ages, abilities, and geographies.

24Statistics Canada. 2017. St. John's, CY [Census subdivision], Newfoundland and Labrador and Newfoundland and Labrador [Province] (table). Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E (accessed March 29, 2019).

25City of St John's 2016 Demographic Survey http://www.stjohns.ca/publications/city-stjohns-demographic-survey-results-2016

26Ibid.

27 2016 Federal Census for City of St. John's.

28 Ibid.

2.0 VISION → GOALS → ACTIONS

2.1 VISION

The City of St. John's is committed to enabling and encouraging more people to ride a bicycle by 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.***

Starting with the visions presented in the 2009 Cycling Master Plan and the Bike St. John's Task Force report the vision was refined by the Bike St. John's Advisory Committee. The vision was further supported during public engagement activities and further refined based on feedback received.

The statement envisions increased bicycle ridership for people of all ages and abilities. It aligns with these strategic directions and goals in the City's Strategic Plan 2019-2029:[29]

- ***A City That Moves -*** A city that builds a balanced transportation network to get people and goods where they want to go safely.
  GOAL M3: Expand and maintain a safe and accessible active transportation network
- ***A Connected City -*** A city where people feel connected, have a sense of belonging, and are actively engaged in community life.
  GOAL C1: Increase and improve opportunities for residents to connect with each other and the City
  GOAL C2: Develop and deliver programs, services and public spaces that build safe, healthy and vibrant communities
- ***A Sustainable City -*** A city that is sustainable today and for future generations; economically, environmentally and financially.
  GOAL S2: Plan for land use and preserve and enhance the natural and built environment where we live

29 City's Strategic Plan 2019-2029

In a future where riding a bike is an easy and attractive way to get around St. John's, safety is paramount. When cycling feels safe, more people choose to ride and with more people cycling, riding a bike is safer for everyone. Good connectivity to regional, city-wide, and neighbourhood destinations on seamless, intuitive bike routes that are easy to navigate ensures convenience. An integrated mobility network means that cycling is integrated with other ways to travel, such as streets, trails, and transit. Destinations are integrated into the network by providing appropriate end-of-trip facilities, such as bicycle parking. The network's safety, convenience, and integration are reinforced by a cycling-friendly culture in which St. John's is a welcoming place to ride a bike. A culture that embraces cycling as a recreational activity and purposeful mode of travel means that people driving, cycling, taking transit, walking or rolling respect and care about each other.

2.2 GOALS

The following four goals help to interpret how the vision is translated into the master plan's actions, projects, performance measures, and project prioritization. They are reflected in the structure of the master plan report.

INFRASTRUCTURE: Build and maintain cycling infrastructure that is inviting for people of all ages and abilities.



PROGRAMS: Develop a cycling-friendly culture with encouragement, education and enforcement.



POLICY: Adopt policies and a legal framework that support a vibrant cycling environment.



EVALUATION: Monitor and assess progress of network implementation against the following key targets:

- Increase the number of people choosing to cycle in the City of St. John's.
- Create a cycling environment that is welcoming to all, so that the people choosing to cycle are proportionally representative of city demographics (i.e., age groups, genders, and incomes).
- Implement new sections of planned infrastructure each year (i.e., kms of new facilities constructed).

2.3 ACTIONS

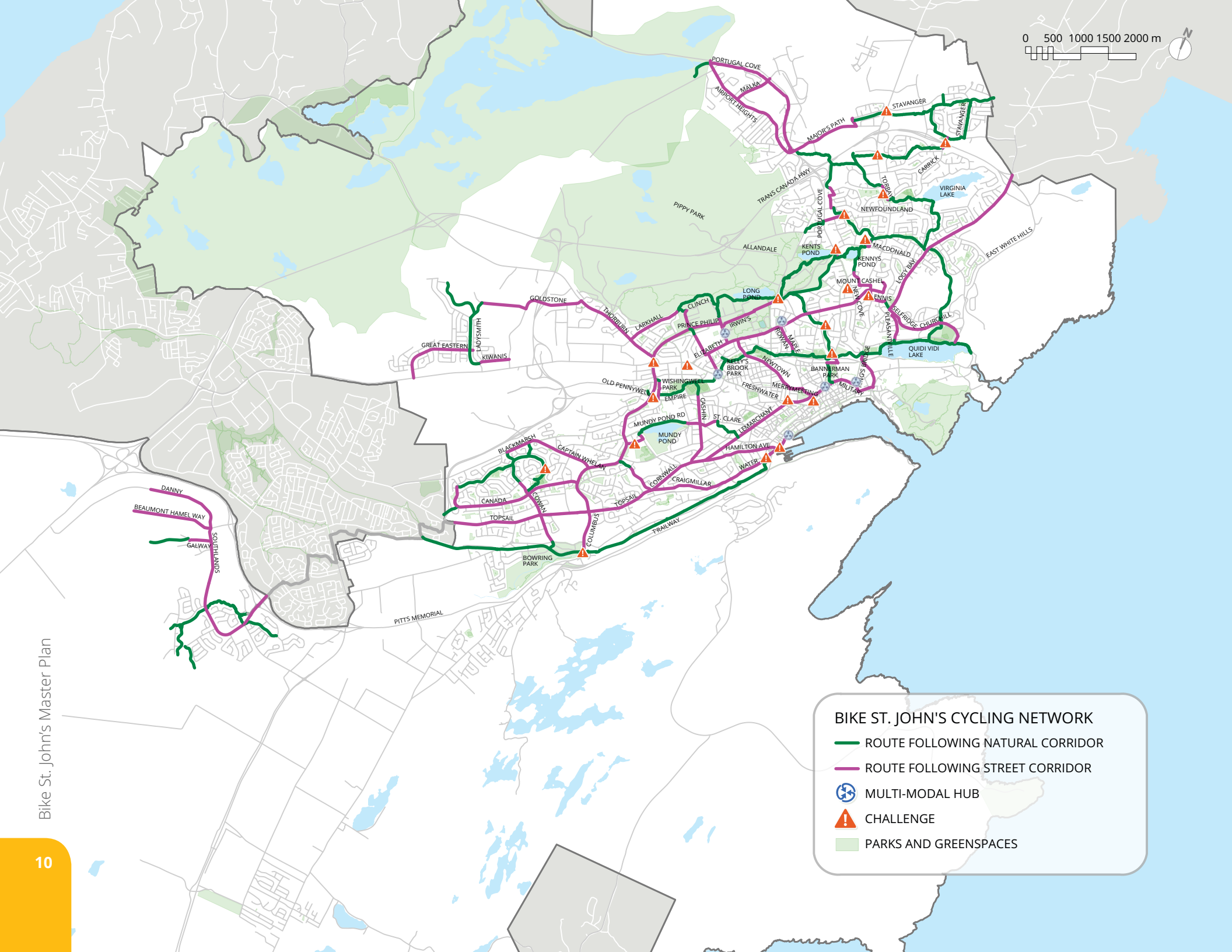
Throughout the following chapters actions are identified to translate the discussion into specific tasks. These actions are categorized into one of four groups:

PRIMARY ACTIONS: *these actions can be undertaken in the short term using current resources. Some require capital funding before they can proceed.*

SECONDARY ACTIONS: *these actions reflect a long list of work that can be completed to support cycling in St. John's. Unlike for Primary Actions, additional resources and/or commitment is required to deliver on these tasks. Most require funding from the operating budget to occur. This might take the form of an increase to a line item but, many require significant dedication of staff time.*

ONGOING ACTIONS: *these actions represent practices to be adopted at the staff level to ensure cycling is supported in accordance with this plan.*

EXTERNAL ACTIONS: *these actions are recommendations for external organizations to consider that would support cycling in the City of St. John's. The City will need to advocate for these actions and work with the relevant organizations.*


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N
PORTUGAL COVE
MALKA
AIRPORT HEIGHTS
MAJOR'S PATH
STAVANGER
STAVANGER
CARRICK
TORBAY
VIRGINIA LAKE
NEWFOUNDLAND
TRANS CANADA HWY
PIPPY PARK
PORTUGAL COVE
ALLANDALE
KENTS POND
KENNYS POND
MACDONALD
EAST WHITE HILLS
LOCH BAY
MOUNT CASHEL
NEW COVE
ENNIS
SELFRIDGE CHURCHILL
PLEASANTVILLE
QUIDI VIDI LAKE
LONG POND
GOLDSTONE
THORBURN
LARKHALL
CLINCH
PRINCE PHILIP
IRWIN'S
ELIZABETH
ROWAN
MAPLE
BRIDGE
NEWTOWN
BANNERMAN PARK
MILITARY
MERRYMEETING
FRESHWATER
KELLY'S BROOK PARK
WISHINGWELL PARK
OLD PENNYWELL
EMPIRE
CASHIN
MUNDY POND RD
MUNDY POND
ST. CLARE
LEMARCHANT
HAMILTON AVE
WATER
CRAIGMILLAR
CORNWALL
TOPSAIL
COWAN
COLUMBUS
TRAILWAY
BLACKMARSH
CAPTAIN WHELAN
CANADA
TOPSAIL
BOWRING PARK
GREAT EASTERN
KIWANIS
LADYSMITH
DANNY
BEAUMONT HAMEL WAY
GALWAY
SOUTHLANDS
PITTS MEMORIAL
BIKE ST. JOHN'S CYCLING NETWORK
ROUTE FOLLOWING NATURAL CORRIDOR
ROUTE FOLLOWING STREET CORRIDOR
MULTI-MODAL HUB
CHALLENGE
PARKS AND GREENSPACES

3.0 INFRASTRUCTURE

The cycling network recommended in this master plan (Figure 3) connects neighbours, neighbourhoods, and essential recreational, commercial and civic destinations throughout the city. Network routes were selected based on the following criteria:

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

The following subsections elaborate on a number of important considerations related to these criteria that were taken into account during the development of the cycling network.

3.1 WHO WE ARE DESIGNING FOR

A good bicycle network is used by a wide variety of people whose demographics are representative of the population. People who ride bikes in St. John's are not currently a diverse group. Presently in St. John's, three times as many men bike to work as women; by comparison, the gender balance of people who walk, use transit, and drive is about 50-50.[30] The gender balance of people who cycle is a measurable and important indicator of a good cycling city. An indicator of a successful cycling network is one where the users are a very diverse group including people of all ages, genders, abilities, and incomes. In particular facilities that are attractive to youth, women, and elderly people are important.

Good bicycle network routes and facilities are designed to be appropriate for all types of bicycles, including people riding tricycles, cargo bikes, recumbent bikes, and adaptive bikes. Network connections are intended to facilitate a wide variety of bicycling purposes including: transporting children to school, picking up groceries, riding to work, pulling trailers, and training for a triathlon.

30 2016 Federal Census, City of St. John's.

FIGURE 3 | BIKE ST. JOHN'S CYCLING NETWORK

To increase bicycle ridership, this master plan is based on the premise that, "riding a bicycle should not require bravery". Many cities use an approach, that categorize people who cycle into four types, as a proportion of the population: "strong and fearless" (1-6%), "enthused and confident" (7-28%), "interested but concerned" (37-60%), and "no way no how" (25-38%).[31] The cycling network is designed to attract the large segment of the population that is interested but concerned, who would cycle more often or try cycling if conditions were right.

The needs of people who are strong and fearless or enthused and confident are not necessarily the same as those for people who are interested but concerned. As such, measured consideration is given to accommodation for these two groups in designing bicycle infrastructure.

3.1.1 EMPHASIZE OFF-STREET ROUTES

Throughout the public engagement process, people identified a strong preference for off-street bicycle routes through natural areas. This local preference is reinforced by a growing body of research about cycling motivators and deterrents. A 2008 study[32] 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, have beautiful scenery, and are flat.

3.1.2 UPGRADE EXISTING TRAILS

The Grand Concourse trail system was intended to provide nature-based pedestrian corridors. Over time its 125 km long network has expanded to include sidewalks. Trails are widely used in St. John's; the city's 2016 residential survey reports 76% of households use trails. Upgrading carefully selected Grand Concourse corridors to shared-use paths will enable a wide variety of users to safely and comfortably share these trails.

3.1.3 VIBRANT, PEOPLE-CENTERED SPACES

Trails and streets enhanced for active and multimodal movement are also naturally social spaces and contribute to a more vibrant community. Cycling facilities can be designed to improve the areas where they are located, contributing to welcoming, walkable, people-centered spaces.

Where off-street trails are not feasible, the development of on-street bike routes can be approached as an opportunity to enhance streetscapes.

31 Approach first used in 2006 by Roger Geller, Bicycle Coordinator, Portland Office of Transportation.

32 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

3.1.4 SHARE-USE PATHS SERVE EVERYONE

Using shared-use paths in developing the cycling network leverages investment to serve a much broader purpose in the community:

- Asphalt paths better serve those with accessibility needs
- Broader trails allow more daylight which improves a sense of personal security
- More prominent and well-connected trails improve travel options by any active mode and for those who have limited access to vehicle travel
- People out for a stroll, walking the dog, jogging or doing other activities benefit from the improved trail surface and better drainage a path

3.1.5 COMMUNITY ACCEPTANCE

It is important to ensure residents and stakeholders impacted by new bicycle facilities are aware and engaged prior to their construction. Community acceptance is an important component of successful implementation. Accordingly, during consultation, residents noted the importance of limiting impacts to existing on-street vehicle parking spaces. This plan recommends the construction of on-street bicycle facilities along certain routes. The types of facilities chosen for these routes will reflect consideration of many variables, including limiting impacts to existing on-street parking and to the natural feeling of existing trails while providing high quality cycling infrastructure.

ONGOING ACTION: *Engage with communities as cycling infrastructure is implemented.*

Depending on the opportunity for changes to be made, this consultation may fall anywhere on the engagement spectrum.



3.2 DOWNTOWN

Downtown is an important work, leisure, and tourism destination with high residential density. Twenty-four percent of St. John's residents (living outside of Downtown) commute to work Downtown and 74% visit Downtown on a monthly basis or more.33 Outside of work related reasons, visits Downtown are primarily for leisure: 85% are for entertainment/ dining, 64% are for shopping, and 64% are for walking / browsing.[34]

Due to its high residential density, improvements to the bicycle network Downtown will impact more people and create greater opportunity for increasing bicycle trips. There is also already a higher level of bicycle ridership among Downtown residents than the city overall. Fewer people commute using an automobile (72%) compared to those living citywide (89%).35 More Downtown households report cycling at least sometimes (18%), compared to citywide (15%). Sixteen percent of downtown households report never driving, compared to 8% citywide.[36]

Downtown has great bicycling potential; however, more work is needed to recommend routes and facilities where steep grades, narrow streets, and on-street parking present significant constraints. Multi-modal hubs at key access points to Downtown will support mode transitions from bicycle rider to pedestrian until bicycling comfort Downtown is achieved for all.

SECONDARY ACTION: *Complete an area study to determine best approach for cycling accomodation in the Downtown.*

A neighbourhood level plan may be able to incorporate this type of study.

33 St. John's 2016 Demographic Survey http://www.stjohns.ca/publications/city-stjohns-demographic-survey-results-2016

34 Ibid.

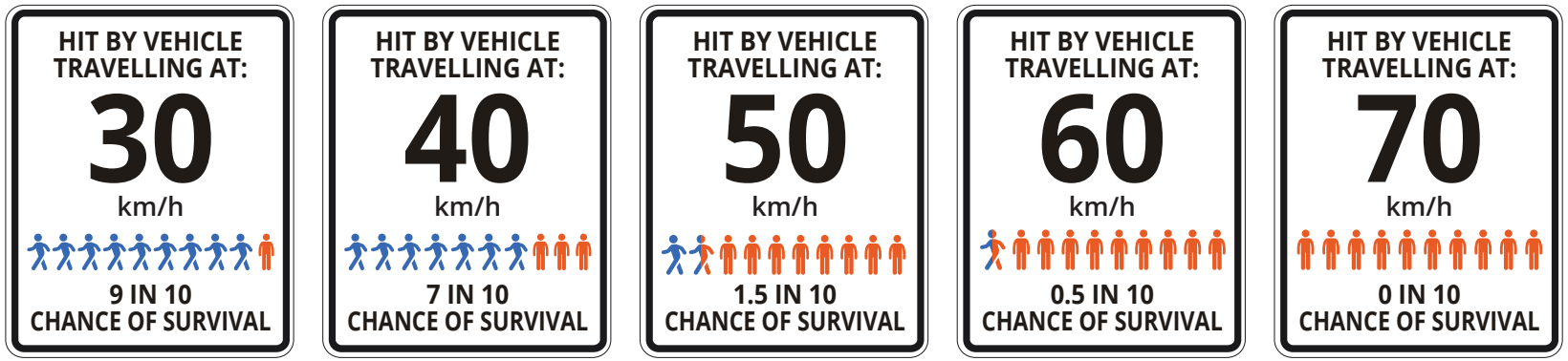
35 Ibid.

36 Ibid.

3.3 CYCLING INFRASTRUCTURE AND AMENITIES

Selection of an appropriate bicycle facility type depends on the comfort level that the facility affords relative to the corridor in which it is placed. Motor vehicle speed and volume are critical considerations in this decision-making. Figure 4, below, illustrates how the severity of a collision between a motor vehicle and an exposed person increases rapidly with speed[37].

FIGURE 4 | SURVIVIAL RATES OF EXPOSED PERSONS STRUCK BY MOTOR VEHICLE



37World 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

3.3.1 INDUSTRY GUIDANCE

Design guides, specifications, and laws that are being referenced when designing bicycle facilities include:

- Transportation Association of Canada's Bikeway Traffic Control Guidelines for Canada,
- Canadian Guide to Traffic Calming,
- Newfoundland and Labrador Highway Traffic Act (HTA), provincial Regulations, and the
- St. John's Specifications Book

Implementation of all technical components identified in this plan will rely primarily on the best industry guidance available. As such, only a few design criteria are noted in this plan.

Appendix F includes construction specifications for common groups of facility types.

PRIMARY ACTION: *Incorporate cycling facility construction specifications into a future update of the St. John's Specifications Book.*

3.3.2 INTERSECTIONS

Selecting appropriate intersection treatments along bike routes is crucial. When implementing new bicycle routes, intersections are typically upgraded for ease of use by people of all ages and abilities.

Intersections that facilitate people cycling across without having to dismount provide a better experience for the user.

Collisions and near misses are most likely to occur at “conflict points” such as intersections, transitions or driveways. To reduce the risk of collisions at conflict points, it is generally best to separate motor vehicles and bicycles. Further, lowering vehicle speeds reduces the severity of potential conflicts. It's important to clearly mark where each user is expected to be, and when, leading to predictable patterns of movement. Consider using treatments such as elephants’ feet markings along crossrides, bicycle signals, conflict zone markings, and bicycle ‘green’ boxes to clearly direct user positions at intersections with a shared-use path or other bicycle facility.



Example of green bike box at intersection


Example of elephants' feet crossing and bicycle signal; Photo by Spencer Thomas via Flickr

3.3.3 LINEAR INFRASTRUCTURE

SHARED-USE PATHS

Facility Description

- Shared-use paths offset from traffic follow the street corridor but are separated from vehicle traffic by a boulevard.
- They allow two-way travel for all active modes.
- "Municipal Paths" in the Open Space Master Plan may be designed as a shared-use path.
- Minimum 3.0 metre width.
- Smooth paved surface.

Appropriate Context

- Shared-use paths offset from streets are less influenced by adjacent traffic speed or volumes and are best located on routes with fewer driveways and/or lower volume intersections.
- Consider separate pedestrian and bike trails when greater than 100 persons per hour (for typical 3m shared-use path).
- Shared-use paths with a hard-packed granular surface provide a lower quality facility but may be acceptable in some circumstances.

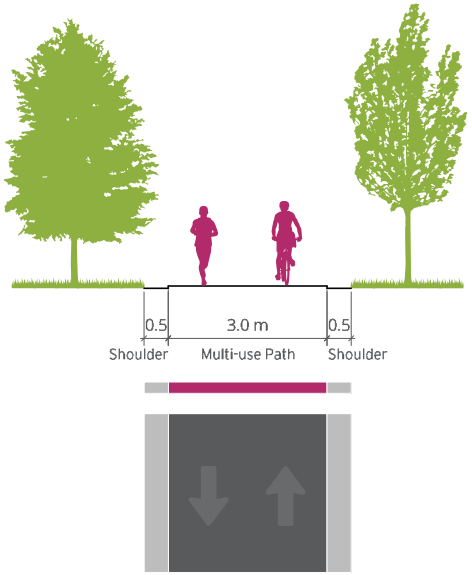


FIGURE 5 | EXAMPLE OF SHARED-USE PATH IN A NATURAL CORRIDOR

Other Considerations

- Upgrading trails to widths suitable for shared-use with paved 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
- Can be used for both recreation and purposeful travel
- Natural surroundings and beautiful scenery motivate people to take advantage of the facility
- Preventing collisions between trail users requires courtesy. Providing information about users' responsibility for maintaining each others' safety is important (see Section 4.2 for more on education).
- Off-street corridors can be less direct to desired destinations and/or have fewer access points.
- Route choice may impact natural environment.

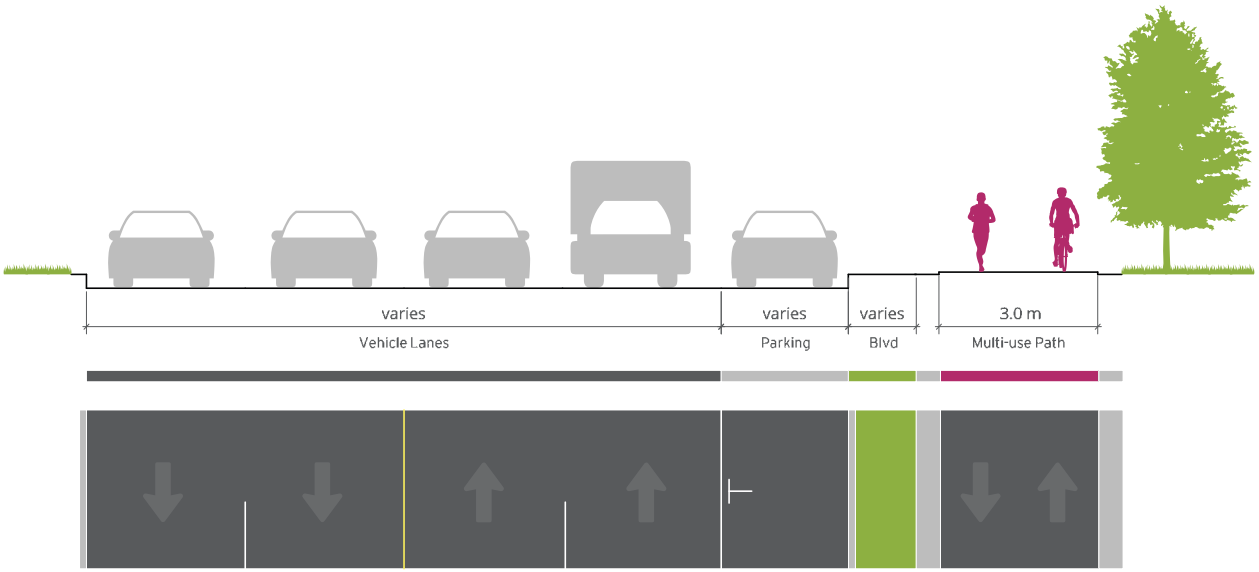


FIGURE 6 | EXAMPLE OF SHARED-USE PATH OFFSET FROM TRAFFIC

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 or separated by planter boxes, curb, or bollards).

Appropriate Context

- Low to Medium Traffic Speeds
- Medium to High Traffic Volumes

Other Considerations

- 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.
- Greater appeal for purposeful travel
- Less comfortable for less confident riders.
- People riding bikes are relatively close to motor vehicles.
- Potential impacts on property access and on-street parking.

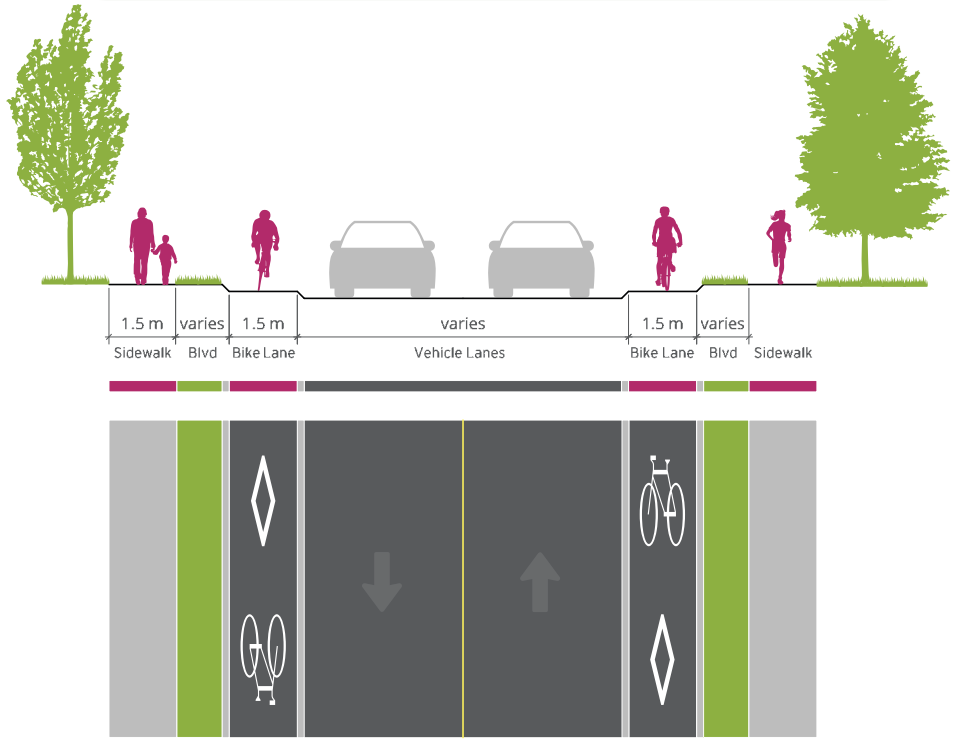


FIGURE 7 | EXAMPLE OF PROTECTED BIKE LANE

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 signs.

Appropriate Context

» Traffic calming measures are usually more restrictive than those used on a street with no accommodation for cycling

» Lower traffic speeds

» Lower traffic volumes

Other Considerations

» High comfort for confident bike riders.

» Moderate comfort for less confident riders.

» Vehicles and people riding bikes share the same physical space.



FIGURE 8 | EXAMPLE OF TRAFFIC-CALMED BIKE BOULEVARD

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.

Appropriate Context

Conventional Bike Lane:

» Lower traffic speeds

» Lower traffic volumes

Buffered Bike Lane:

» Lower traffic speeds

» Low to medium traffic volumes

Other Considerations

» High comfort for confident bike riders

» Visible separation between vehicles and bike riders

» Moderate to low comfort for less confident riders

» Vehicles and people riding bikes share the same corridor

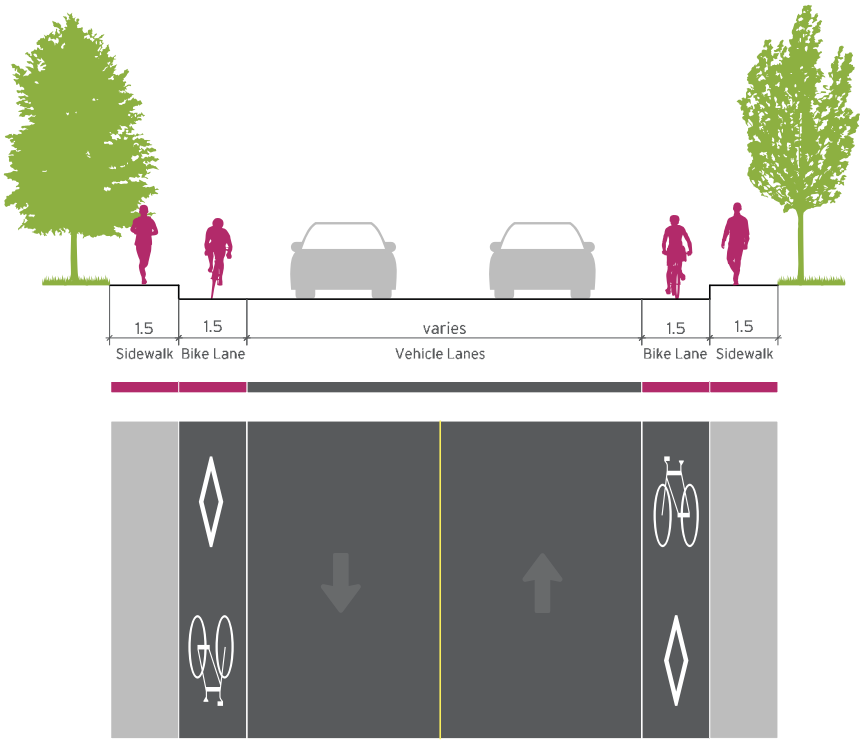


FIGURE 9 | EXAMPLE OF PAINTED BIKE LANE

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 yield to people cycling, and only drive within advisory bike lane bounds to avoid oncoming traffic.

Appropriate Context

» Low traffic speeds

» Low traffic volumes

» Narrow roadways

Other Considerations

» Comfortable for confident bike riders.

» Moderate to low comfort for less confident riders.

» Vehicles and people riding bikes share the same space.

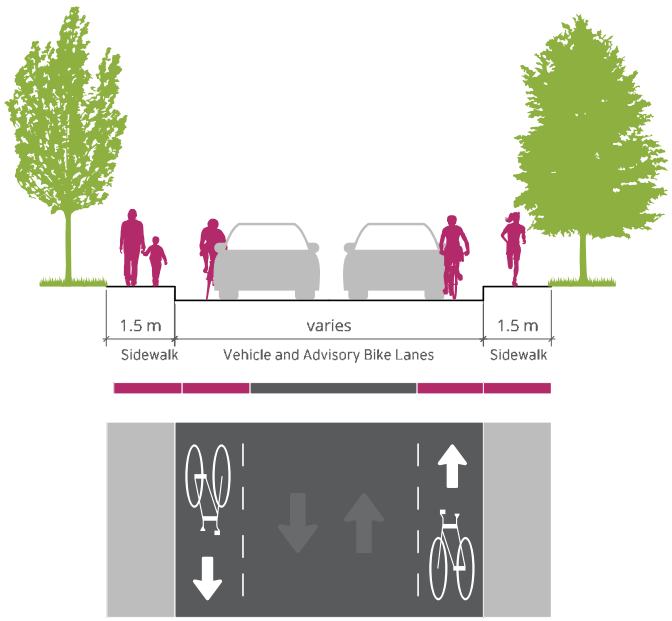


FIGURE 10 | EXAMPLE OF ADVISORY BIKE LANE

BICYCLE-ACCESSIBLE PAVED SHOULDERS

Facility Description

- Bicycle-accessible paved shoulders provide a designated space for people cycling outside the vehicle travel lane.
- Separated by adjacent motor vehicle traffic by a solid white edge line, with sufficient operating space and a smooth paved surface clear of snow and debris.

Appropriate Context

- Roads without gutters, curbs, or on-street parking.
- They are not an all ages and abilities facility type. Suitable for experienced and confident riders, they provide cycling connections, particularly in rural areas.

Other Considerations

- Increases operating width for people who drive and cycle.
- May be used by people walking, especially in rural areas
- Shoulders typically collect debris and spring maintenance is particularly important
- Low-cost facility with multiple uses

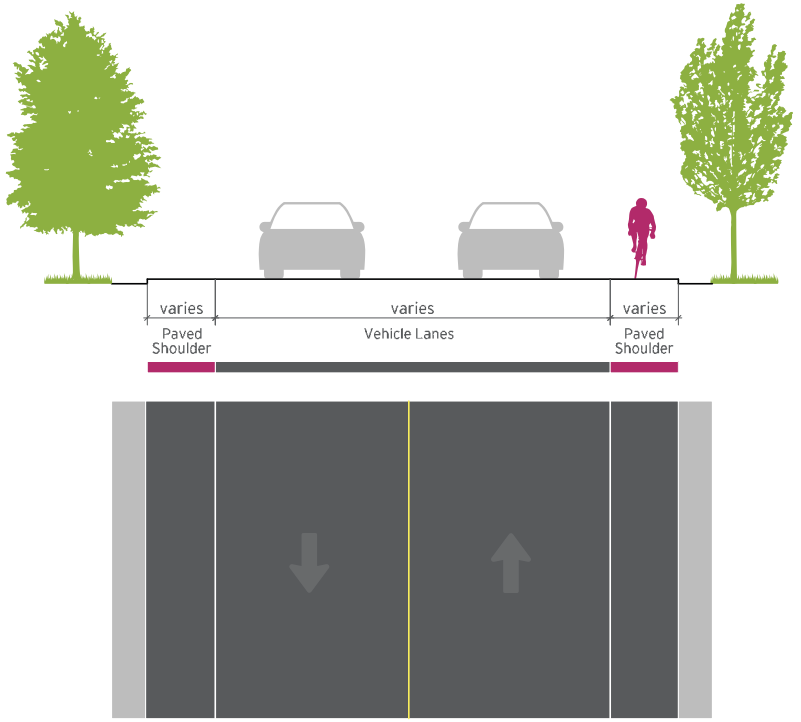


FIGURE 11 | EXAMPLE OF BICYCLE-ACCESSIBLE PAVED SHOULDERS

3.3.4 END OF TRIP FACILITIES

MULTIMODAL HUBS

Proposed locations of multimodal hubs are shown on Figure 12 at key destinations such as the MUN campus and downtown. Connected to bike routes and bus stops, they provide convenient options for people to park their bike and access nearby destinations. For example, people may choose to cycle to a multimodal hub at the edge of downtown, lock-up to secure bike parking and comfortably continue their trip as a pedestrian 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. This is particularly helpful in poor weather, for long trips, or to overcome an uphill challenge.

Multimodal hubs in the downtown are meant to connect the cycling network to an area where tight streets, motor vehicle activity, and steep hills are significant barriers to comfortable cycling. This concept still allows people to ride their bikes downtown but provides a convenient option for those less confident to leave their bikes and walk downtown.

High quality design of hubs includes highly visible structures with secure long-term bike parking, weather-protection, seating, trash receptacles, as well as transit and cycling network information. High quality hub design includes a focus on convenience and security, with increased visibility to draw attention to both cycling and transit.

SECONDARY ACTION: *Install multi-modal hubs at key destinations where bicycle users can integrate with transit and other active transportation modes.*

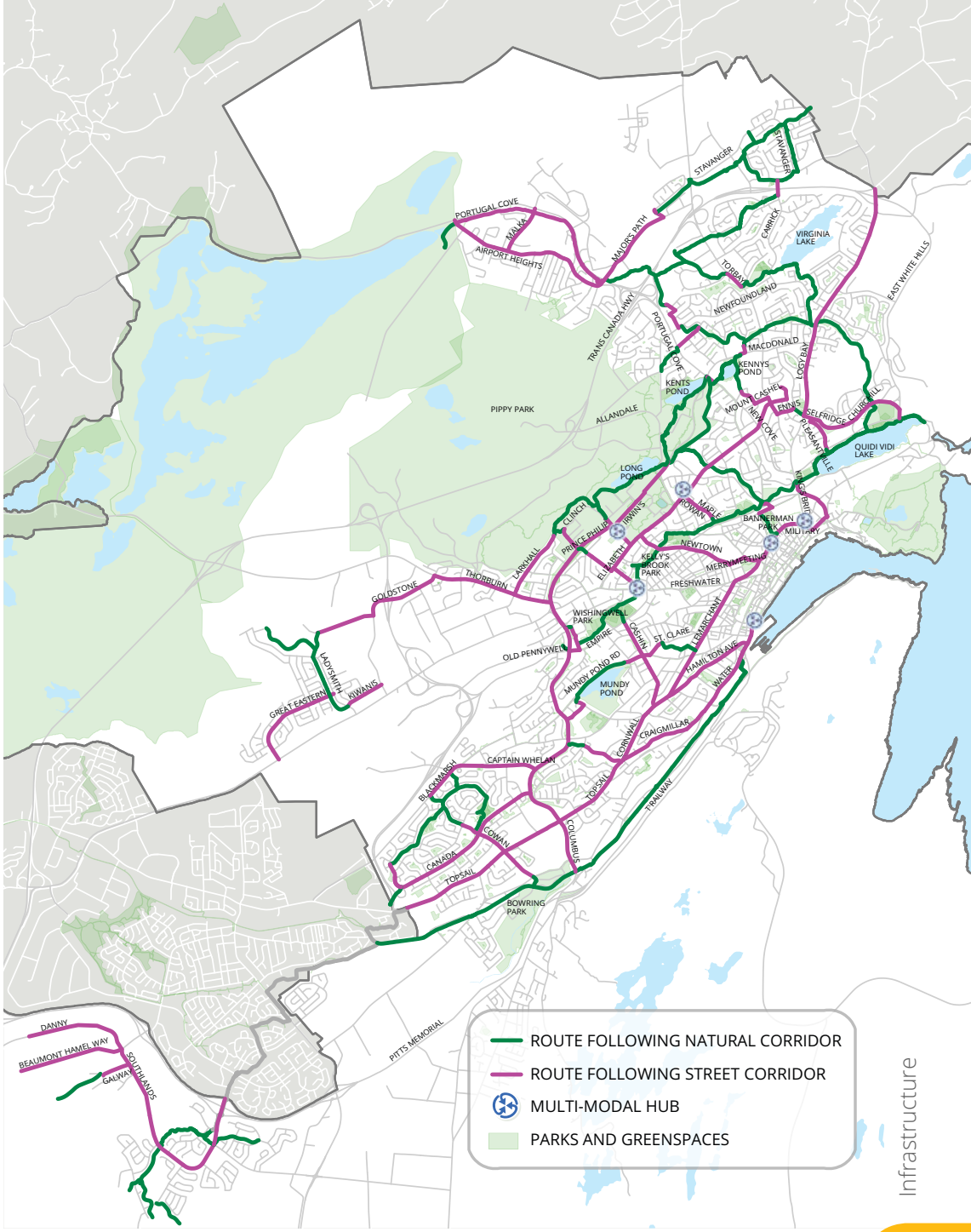


FIGURE 12 | RECOMMENDED LOCATIONS FOR MULTIMODAL HUBS



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 is available in many industry guidelines. A good example is the Association of Pedestrian & Bicycle Professionals' Bicycle Parking Guidelines, 2nd Edition (2010).[38].



Short Term

Short-term parking is appropriate in areas where people stop to run errands, have a meal, or recreate. Ideal placement is easily visible from the bike network and by pedestrians passing by. Short term bicycle parking is primarily be **easy-to-use** and in **close proximity to destinations**, such as in front of building entrances. It is important to accommodate a range of bicycle types and sizes including longer bikes with trailers where possible. Examples of short-term bicycle parking include those discussed below.



Bike Racks

Bike racks are ideally situated within 50 feet or less from the entrance of the destination they serve. Good bike racks are sturdy, they are anchored to the ground, their design is self explanatory, and they support the bike frame in at least two places. Ideal placement is visible to the public and are 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. These designs can be used to provide unique bicycle parking across the City.

38 https://www.apbp.org/page/Bike_Parking



Bike Corrals

Bike corrals offer higher capacity (typically 8 to 12 bicycles), short-term bicycle parking. Typically located at street level they are suitable for locations with limited sidewalk space for bike racks, but with strong bicycle parking demand. They may be located on-street, adjacent to the curb, in a location not suitable for vehicle parking. Some jurisdictions convert single on-street parking spaces into bike corals, either permanently or just for the summer season.



Sheltered bike parking

Where possible sheltered bike parking can to provide protection from 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 can 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. Ideally they are visible and located in well-lit areas. The large plastic or metal surfaces of bike lockers present a surface for branding or advertising.



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 with good visibility either outdoors, indoors, or in parking garages. 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). Bike room designs accommodate bikes without crowding and maintain riders' ability to freely maneuver their bike and get in/out of the room. In order to maximize bicycle parking capacity, horizontal racks, double racks, or vertical racks may be installed. Rack types can 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 located within buildings benefit from direct access outside and being be well-lit and visible, within sight of building entrances, security, or an elevator.

Location Selection and Installation

Opportunities to add new bicycle parking are created when other municipal work is scheduled within the public right of way.

PRIMARY ACTION: *Install short-term bike parking where it can be integrated with ongoing street or sidewalk improvements. (Capital allocation required.)*

The general public could help identify areas where bicycle parking is needed through a request-a-rack program. Submissions to such a program could be completed through an online form or 311.

SECONDARY ACTION: *Implement a request-a-rack program where people can submit desired bike rack locations for installation on public property.*

Locations could be prioritized based on merit as determined by the City. The City could also encourage private businesses to add new bicycle parking.

SECONDARY ACTION: *Consult with the business community to develop a bike rack installation program to which businesses and property owners can apply.*

Questions that would need to be answered as part of the consultation in this action would be who bears cost, are official rack designs used, who completes installation, and if public land may be used.

As a way of demonstrating the value of bicycle parking the City could ensure that bicycle parking is available at all municipal buildings open to the public.

SECONDARY ACTION: *Install properly designed short and long-term bike parking options for visitors and employees at those municipal buildings open to the public.*

Posts once used for parking meters can be retrofit and repurposed for bike parking. By taking advantage of existing infrastructure, the parking-meter-to-bike-rack conversion eliminates the cost of removing old posts and installing entirely new bike racks. This is currently done in Ottawa, Saskatoon and Toronto. This may be applicable in some areas as the Paid Parking Management Strategy[39] is implemented.

SECONDARY ACTION: *Consider conversion of decommissioned parking meters into bike racks where appropriate.*

Policy can be adopted to provide temporary bike parking at special events. An example of a possible special events policy change is adding bicycle parking requirements for outdoor events / festivals with more than 1,000 attendees expected.

SECONDARY ACTION: *Review Corporate and Operational Policy: 09-14-01 Special Events Policy, for amendments to support use of bicycles to attend events.*

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.

39 http://www.stjohns.ca/publications/paid-parking-management-strategy

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)*

PRIMARY ACTION: *Update the Envision St John's Development Regulations to include minimum bicycle parking requirements.*

In order to ensure that the racks purchased are of an appropriate design, and that the area where racks are installed provides enough space to maneuver, the City could establish a standard.

PRIMARY ACTION: *Update the City's development design guidance to ensure best practice for design and placement of bike racks.*



SHOWERS AND CHANGE FACILITIES

Developments that offer long-term bike parking benefit from also offering shower and change facilities. These facilities are generally meant for bicycle commuters and are best located near long-term secure bike parking facilities or are incorporated with other related on-site facilities like a fitness centre. Facilities would typically 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 included in development standards or building codes. Commercial buildings, particularly office development, are especially suited to these amenities.

PRIMARY ACTION: *Incorporate criteria for installation of long-term bicycle parking, showers and/or changing facilities in municipal development regulations.*

SECONDARY ACTION: *Complete an investigation into strategies that would encourage owners of commercial businesses and medium to high-density residential properties to install bicycle racks and storage facilities and amenities such as showers and change rooms.*



3.3.5 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.

PRIMARY ACTION: *Install 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, or multimodal hubs. (Capital allocation required.)*

3.3.6 TRANSIT INTEGRATION

Increased cycling in St. John's requires integrating bicycle routes with other modes of transportation, particularly public transit. Multi-modal hubs located at major trip generating destinations along transit routes would improve this integration. Metrobus' fleet is presently equipped with bicycle racks capable of carrying two bicycles. This enables people who bicycle to a destination to switch to the bus or take the bus home as needed. These bicycle racks are only in place from May 1 to November 30. Metrobus provides instructions and rules for using bus bicycle racks.

EXTERNAL ACTION: *Consider allowing childrens' bikes onboard the bus and establish rules for circumstances when there is no rack space available. (Metrobus)*

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

3.3.7 DESIGN CONSIDERATIONS

LIGHTING

Installing adequate lighting along the bicycle network will contribute to facility safety, accessibility, and reliability at all times of day, in all seasons. Lighting is particularly important for winter cycling, when daylight is limited. Thoughtfully-designed lighting can also enhance the aesthetics and attractiveness of bicycle facilities.

Under the HTA, bicycles must be equipped with lights so that they are visible to other road and trail users in low light and night conditions (see Ch. 5). However, bike lights are not typically powerful enough to illuminate the riding surface and wayfinding signs. Lighting is especially important wherever there are wayfinding and warning signs, as well as in areas with a higher likelihood of potential user conflicts (e.g., intersections).

Lighting of bicycle facilities, including routes and supporting amenities, enhance perceptions of safety, which encourages their use and increases bicycle ridership. As previously mentioned, cyclist safety further increases as bicycle ridership increases. The TAC Guide for the Design of Roadway Lighting, Chapter 16 (Off-Roadway Facilities) may be used for design guidance.

All on-street bicycle facilities benefit from lighting. However, illumination of off-street bicycle facilities is subject to case-by-case evaluation.

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

In addition to lighting, there are a number of other related infrastructure design principles, known as Crime Prevention Through Environmental Design (CPTED)[40], that reduce the incidence of crime and increase feelings of user safety. CPTED strategies include but are not limited to:

- Enhancing opportunities for passive surveillance, near occupied areas with a variety of activity
- Maintaining clear sight-lines along facilities and locating facilities in plain view
- Open design, avoiding the creation of potential hiding places
- Access to exit routes
- Ensuring availability to emergency assistance
- Well-lit facilities
- Anti-theft design of facilities

40 http://www.cpted.net/

3.4 WAYFINDING AND COMMUNICATION

3.4.1 THEMED WAYFINDING SIGNS

As the cycling network is developed it would benefit from wayfinding signs providing clear information to users about routes, travel times or distances, and destinations. A design and theme for these signs that is consistent with overall City wayfinding programming, mapping, and promotional materials would also be beneficial. Such a wayfinding system would normally be expanded and updated as the network grows.

Wayfinding signs on shared-use paths are designed for people riding bikes as well as all other shared-use path users. Wayfinding signs along on-street bicycle facilities can be designed exclusively for people riding bicycles. There are different types of wayfinding signs (e.g., gateway, directional, orientation and reassurance). Depending on the wayfinding sign type, the following content may include but is not limited to:

- Route name (e.g., trail name, street name).
- Upcoming routes and/or destinations (e.g., recreation centres, schools, parks). This may be shown on a simplified map with "you are here" information (e.g., like a subway map).
- Distances of destinations identified along route (measured in kilometres rather than time, as people travel at different paces depending on mode and intensity).
- St. John's logo and branding
- City 311 contact information (e.g., in order to report facility conditions)

Wayfinding sign design considerations include but are not limited to:

- High contrast colours (a minimum of 70%)
- Text point size appropriate for expected reading distance of facility user, in accordance with Canadian Standards Association (CSA) guidelines.
- Consistent graphics throughout the network
- Orient maps to the direction people are facing, rather than north.
- Use a linear map, listing destinations in order of arrival.
- Legibility for people of all abilities, incorporating universal symbols and design
- Use of icons instead of text where possible
- Durable sign materials (i.e., direct digital printing on aluminum sign panels)
- Anti-graffiti clear coat and tamper resistant fasteners
- Fade resistant for 10 years

Wayfinding signs that imply a facility type continues beyond the true extents are not appropriate. These lead a person cycling on one type of facility to another type without informing them of the change in operating environment.

3.4.2 REGULATORY SIGNS

Standardized Transportation Association of Canada signs are available for use where appropriate.

3.4.3 MAPPING

The Bicycle Network map completed for this master plan is compatible with Geographic Information System (GIS) software. This mapping provides information on network routes, facility types, and essential destinations identified during consultation. As the network develops, this GIS database may be updated to include implemented infrastructure information (e.g., specific bicycle facility types along routes, end of trip facilities). These maps can be used to evaluate network progress as well as share information with the public via St. John's online Map Centre and print versions available to both residents and visitors interested in bicycling in St. John's.

PRIMARY ACTION: *Import the Bicycle Network map and add to City of St. John's Mapcentre.*

ONGOING ACTION: *Update Bicycle Network GIS data on a regular basis so up-to-date mapping is available on Mapcentre and any print versions.*

3.5 MAINTENANCE

Ongoing maintenance is critical to providing accessible and reliable bicycle routes. A route is only as safe and comfortable as its weakest link. Cycling injury research shows that motor vehicle collisions (including dooring and falling to avoid a motor vehicle collision) typically make up less than half (47%) of bike injury crashes. The other 53% of crashes resulting in injury are caused by surface texture, collision or fall related to a bike/pedestrian/animal or object, or other falling.[41] Relatively small debris or obstructions can have major safety impacts. This is important to consider when planning for maintenance of bike routes and amenities, and for accommodating temporary disruptions.

ONGOING ACTION: *City staff collaborate to ensure appropriate maintenance of cycling facilities across the city.*

Regular inspection and maintenance of bike facilities is needed during all seasons. Accordingly, this section provides guidance for regular network upkeep and repair, season-specific maintenance, and temporary conditions.

41 Harris M. A., Reynolds, C. C. O., Winters, M., et al. 2011. "The Bicyclists' 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

3.5.1 REGULAR UPKEEP AND REPAIR

SHARED-USE PATHS

Maintenance procedures are outlined in the City of St. John's Parks and Open Space Master Plan for "municipal trails". These practices are also suitable for shared-use paths.

ON-STREET BICYCLE ROUTES

It is important to provide a seamless and reliable experience for people cycling along on-street bicycle routes and shared-use paths. Consistent maintenance levels across the network contribute to this experience.

Pavement Surface (Tread Surface Management)

Maintaining a standard appropriate for riders of all ages and abilities is important for smooth pavement surfaces on designated bicycle routes. Grade differences as low as 6mm can be noticeable while cycling. The following activities contribute to this:

- Inspect cycling infrastructure on a regular basis for surface damage, debris, drainage issues, vegetation overgrowth and any other hazards.
- Repair potholes, bumps and other surface disturbances.

Stormwater Management

Manage stormwater pooling and drainage in bicycle routes takes special care. People riding bikes are more vulnerable to splashing and pooling water, inadequate maintenance can deter cycling. Inspecting cycling infrastructure for pooling and drainage issues on a regular basis is important.

PRIMARY ACTION: *Review the design of standard drainage grates[42]. Evaluate suitability of more bicycle-friendly designs such as side inlet or hybrid options.*

In our climate the design of catch basins must meet requirements for the following characteristics:

- Hydraulic performance.
- Maintenance.
- Removing catch basins from travel path of a bicycle.

Options to address this last point include, to varying degrees of success: using a side inlet, insetting the curb at the catch basin, or using a combination gutter/side inlet catch basin.





42 Currently in City Specifications Book http://www.stjohns.ca/publications/construction-specifications-book

Pavement markings

Maintaining cycling facility pavement markings is critical to ongoing use and safety and would be best formalized as City policy.

SECONDARY ACTION: *Review Corporate and Operational Policy: 07-02-01 Traffic Markings - Street Line Painting, for amendments to address pavement markings for cycling facilities.*[43]

Items for consideration include but are not limited to:

- Crossrides / elephants' feet markings.
- Painted bicycle lanes.
- Painted advisory bicycle lanes.
- Painted bicycle symbols.
- Other bicycle facility pavement markings, as needed.
- Ease of maintaining different marking types, for example elephant's feet and lines are easier than symbols.

MULTIMODAL HUBS AND END OF TRIP FACILITIES

- Regularly inspect bicycle parking for damage.
- Remove abandoned bicycles and include weatherproof removal notice tag (i.e., vinyl bracelet style similar to those the City uses for pool entry).
- Consider seasonal installation and removal of bicycle corrals.

SIGNS AND WAYFINDING AMENITIES

- Regularly inspect signs for damage, vandalism, fading, and any other hazards.

43 http://www.stjohns.ca/policies.nsf/nwPolicyNum/07-02-01

3.5.2 SEASONAL MAINTENANCE

Different seasons present different challenges for planning bicycle network maintenance. The following sections offer guidance for year-round maintenance.

SPRING / SUMMER / FALL

Sweeping cycling infrastructure in seasons outside of winter accounts for varying seasonal needs (e.g., fallen leaves, storm debris). The Street Cleaning By-Law44 and associated City web-page45 outline current practices with respect to street sweeping.

SECONDARY ACTION: *Update street sweeping practices to include consideration of on-street cycling facilities.*

ONGOING ACTION: *Inspect and trim vegetation along bicycle facilities annually.*

WINTER

Current municipal snow clearing and ice control policies prioritize all roadways, some off-street parking areas, and some sidewalks, steps and laneways. A reliable, predictable cycling network that is available year-round helps support cycling as a permanent mode choice. As the cycling network is implemented and cycling culture develops consideration of year-round maintenance including snow removal would be appropriate.

ACTION: *Develop a winter maintenance strategy for the bicycle network.*

Significant discussion and review of how cycling facilities overlay with current snow clearing route priorities would be required to implement such a strategy. Other considerations include:

- Planning winter operations (e.g., prioritizing snow clearing at multimodal hubs, developing an ice control strategy)
- Purchasing new equipment
- Locating bicycle racks (e.g., considering adjacent space and potential for clearing)
- Identifying potential conflicts with regular winter maintenance (i.e., flagged during snow clearing season with a marker visible to operators).

SECONDARY ACTION: *Update snow clearing policies to include consideration of all cycling facilities.*

SECONDARY ACTION: *Review Corporate and Operational Policy: 08-01-01 Snow Clearing Priority (Streets and Sidewalks), 08-01-02 Street Snow Clearing, 08-01-03 Ice Control, and 08-01-04 Sidewalks Snow Clearing for amendments to address snow clearing practices on cycling facilities.*

44 http://www.stjohns.ca/city-hall/about-city-hall/laws-and-regulations?/ByLaws.nsf/nwByLawNum/1439

45 http://www.stjohns.ca/living-st-johns/streets-traffic-and-parking/street-cleaning/downtown-street-cleaning

It is important to consider how snow clearing on cycling facilities can, without strong year-round cycling demand, add a disproportionate burden on maintenance resources. As such, when and if these types of maintenance commence is a key aspect of this review. Additional items for consideration include but are not limited to:

- Prioritization of clearing snow on shared-use paths.
- Prioritization of clearing snow on streets with designated bicycle facilities.
- 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 with painted bicycle lanes.
- Strategies for plowing / removing snow from streets with advisory bicycle lanes.
- Strategies for plowing / removing snow from bicycle accessible paved shoulders.
- Strategies for removing snow from bicycle amenities (e.g., racks).
- Strategies for ice control of slippery conditions on shared-use-paths.

3.5.3 TEMPORARY CONDITIONS

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. When a bicycle route suddenly ends without advance notice and/or a planned detour, it can have disproportionate impacts on a rider's comfort and safety. An unaccommodated disruption can leave a less than confident cyclist in a stressful situation without alternative route options. In order to maintain user comfort during route disruptions, closures, or detours, the following are effective:

- Advance warning signs located along affected route(s)
- Consistently designed signs warning of closures, disruptions, or safety conditions (construction ahead, metal plates, gravel patch ahead, etc.).
- Adequate communication of closure dates
- Provision of reasonably direct detour route
- Adequate communication of detour routes

SECONDARY ACTION: *Update the City of St John's Traffic Control Manual to include interruptions to cycling facilities in Traffic Control Plans.*

ONGOING ACTION: *Account for accommodation of bicycle route disruptions / closures / detours in street excavation permitting.*

SECONDARY ACTION: *Develop a strategy for communication of bicycle network disruptions, closures, or detours.*

4.0 PROGRAMMING

The City aims to achieve a bicycle friendly culture in which St. John's is a welcoming place to ride a bike. The League of American Bicyclists and Share the Road[46] use five categories commonly referred to as the "5 E's" to measure bicycle friendliness:[47]

- ***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

Chapter 3.0's focus on infrastructure addresses "Engineering" and Chapter 6.0's presentation on a Monitoring and Evaluation Plan addresses "Evaluation & Planning". This chapter outlines programs targeting "Encouragement", "Education" and "Enforcement". Collaboration with the following community partners will enhance program implementation:

- MUN Bike Share
- MUN Beap Lab
- Ordinary Spokes
- Happy City St. John's
- Bicycle Newfoundland and Labrador
- The Grand Concourse Authority
- Local bike shops
- School boards and schools
- Post-secondary institutions
- Enforcement agencies (RNC)

46 https://www.sharetheroad.ca/bicycle-friendly-communities-p138264

47 https://bikeleague.org/content/5-es

4.1 ENCOURAGEMENT

4.1.1 TRANSPORTATION DEMAND MANAGEMENT

When more people decide to commute without a car, those people, employers, and /or post-secondary institutions reap the benefits of higher productivity, improved mental and physical health, 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.

SECONDARY ACTION: *Develop a TDM checklist for major employers and post-secondary institutions. TDM program implementation should be monitored and successes advertised.*

PRIMARY ACTION: *Lead by example and implement TDM measures for City buildings.*

A few examples of TDM measures that the City could implement include:

- Providing a Metrobus pass for employees that do not request a parking pass. (Also recommended in the 2008 Downtown St. John's Parking Study.)
- Providing carpooling incentives such as preferential parking.
- Implementing a price on employee parking passes.
- Improving bicycle parking.
- Providing an emergency ride home service.
- Staggering work hours

4.1.2 EVENTS

Bicycle themed events are a great way to celebrate, promote and encourage cycling. City involvement in events would be run by Community Services. The following sections identify various models for city and bicycle-partner events. It is important to note that staff capacity to organize effects is a key constraint in the number and type of events that the City can participate in.

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 games, educational 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.

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 lines. 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.

BIKE MONTH

To kick off the cycling season, cycling advocacy groups in many cities across Canada celebrate Bike Month or, as in done in Halifax[48], Bike Week. 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 rides, Bike to School Week, cycling tours, outfitter/shop demo days, and neighbourhood-specific bike rides and festivals.

SECONDARY ACTION: *Participate in delivery of Bike Month, Bike Week, BikeFest, Open Streets, or similar events with support of community partners, to promote and celebrate cycling and active transportation.*

Completing this action would require additional staff and/or capital funding. As an example, BikeFest was completed on a budget of $20,000 and this figure can be used to guide future bicycle event budgeting.

4.1.3 YOUTH ENCOURAGEMENT

It is important to focus on youth in bicycle programming to encourage long-term behaviour change and support increased independence for population segment that can't drive.

48 https://www.halifax.ca/transportation/cycling-walking/bike-week

SAFE ROUTES TO SCHOOL

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

ONGOING ACTION: *Support programming that encourages youth to ride bicycles to school.*

SECONDARY ACTION: *Work with local schools to coordinate delivery of in-school programming regarding cycling best practice.*

4.1.4 UNDERREPRESENTED POPULATIONS

A cycling network that works for all people is important. When this is the case people who ride bicycles are representative of the city's demographics. Quality programming encourages ridership in underrepresented populations. Existing bicycle facilities across the province do not presently support a representative population of bicycle riders. For example, in Newfoundland and Labrador, more men ages 12 and up reported riding a bicycle in the past year (20%) than women (12%).[49] In addition to infrastructure improvements that will enhance bicycle network comfort for all, programming that increases ridership among traditionally underrepresented populations (seniors, women, newcomers, and people with disabilities) is important.

49 Statistics Canada. "Table 1 Percentage who reported cycling in past 12 months, by sex and selected characteristics, household population aged 12 or older, Canada, 2013/2014." 2013/2014 Canadian Community Health Survey. Date modified: 2017-07-12. Accessed 8 April 2019. https://www150.statcan.gc.ca/n1/pub/82-003-x/2017004/article/14788/tbl/tbl01-eng.htm

4.2 EDUCATION

4.2.1 BICYCLE AMBASSADORS

Bicycle Ambassadors are a mobile outreach team that educate people about how to safely use and interact with new bicycle facilities. They offer presentations, educational materials, and ride-alongs on bicycle routes. They also promote bicycle education at block parties, street festivals, and more. Edmonton's Bike Education Street Team and Chicago's Bicycling Ambassadors are good examples of successful programs. This type of program can help with public engagement in advance of implementing new bicycle facilities (discussed in 7.2 Bicycle Network Implementation), and can assist with bicycle network evaluation through delivery of user intercept surveys (discussed in more detail in 6.1.4 Intercept Surveys).

SECONDARY ACTION: *Hire a bicycle ambassador seasonally to promote and educate all road users about bicycle safety.*

4.2.2 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.[50] The City may collaborate with school boards, the provincial education department, and community organizations to reach school-aged youth. The following are a few examples of educational programs specifically designed for young people.

SPROCKIDS

Sprockids[51] is an instructional program designed to engage young people, ages 6 to 18 years, in mountain biking.

CYCLE KIDS

Cycle Kids[52] provides a curriculum for 4th and 5th grade students that 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.

CAN-BIKE

CAN-BIKE is Canada's only national safe cycling education program. CAN-BIKE courses empower cyclists to ride more confidently and more safely. The Canadian Cycling Association has continuously developed the CAN-BIKE program over the last 30 years and delivered it in many communities across Canada.

Bicycle Newfoundland and Labrador is the provincial CAN-BIKE delivery partner. In association with Bicycle Newfoundland and Labrador, the City of St. John's Department of Recreation has previously offered CAN-BIKE courses to residents.

The CAN-BIKE program offers a proven curriculum delivered to national standards. There are courses to suit a wide range of cycling ages, abilities and purpose. There are courses for adults who have never ridden bikes, for children learning to ride on the road, for adults riding on residential roads and bike paths, for rural cycling, and advanced skill development for riding in

50 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

51 https://www.sprockids.com/

52 http://www.cyclekids.org

all traffic conditions.

Individuals who do well in the advanced level course (i.e. CAN-BIKE 2) are eligible for the CAN-BIKE instructor workshop where, based on their performance, they can become a certified CAN-BIKE instructor.

To maintain national standards, CAN-BIKE instructors must be highly skilled cyclists, have excellent risk management skills, know how to teach children and adults on the road and in classrooms, and be an advocate for cycling safety in their communities.

4.2.3 ROAD USER EDUCATION

Road user education includes information on the rights, responsibilities, and proper interactions of all road users: people who ride bicycles, pedestrians, and people who drive. This information may be incorporated in driver training curriculum and be included in the Road User Guide[53], a key resource for the education of all road users in Newfoundland and Labrador. Knowing how to share the road safely with all types of road users is a skill necessary to become a "safe licenced driver" as well as a safe cyclist and pedestrian.

EXTERNAL ACTION: *Amend the provincial Road User Guide to address issues related to cyclists and pedestrians. (Service NL)*

In 2016 the Bike St. John's Task Force, through Council, contacted[54] the Minister of Municipal Affairs to encourage changes be made to the Road User Guide[55] and to offer assistance with same.

4.2.4 NEW BICYCLE ROUTE EDUCATION CAMPAIGNS

It is important to develop and deliver education campaigns specific to proper on-street and off-street bicycle facility use. On-street bicycle facility education campaigns can include information about how to use the bicycle facility, recommended etiquette, and a review of relevant rules of the road. A shared-use path education campaign can include information about sharing paths respectfully and safely. This program may include considerations such as:

- Riding a bicycle at a reasonable speed on a shared-use path, relative to path 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 or 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.

Educational campaigns are best when they target all users including pedestrians, people driving, and people cycling.

53 https://www.servicenl.gov.nl.ca/drivers/driversandvehicles/driverlicensing/roadguide.pdf

54 Bike St. John's Task Force Letter. September 1, 2016. Accessed 9 April 2019. http://www.bikestjohns.ca/assets/PDF/Road_User_Guide_Letter.pdf

55 https://tests.ca/wp-content/uploads/2018/06/NL_road_users_guide.pdf

SECONDARY ACTION: *Develop and deliver educational campaigns in connection with the opening of new bicycle facilities.*

Campaigns would target facility users, and those that may interact with these users, and provide information about proper use of bicycle facilities and relevant multi-modal interactions.

4.2.5 EDUCATIONAL MATERIALS

Educational materials developed as part of events, programs, and campaigns may be provided in both printed and online formats.

Printed information (e.g., bicycle network maps, safety brochures) can be made available at partnering bicycle-friendly organizations/businesses and high-traffic public centres like libraries, community centres, and tourism information services.

The City of St John's website, www.stjohns.ca, is the main source of information about municipal services, processes and publications; however, it currently lacks information about bicycling. This can be addressed by incorporating the City site dedicated to dedicated to cycling information.[56] More detail is provided about opportunities for bicycling information on the City of St. John's website in Appendix G.

ONGOING ACTION: *Update and maintain the content of www.bikestjohns.ca.*

4.3 ENFORCEMENT

To increase bicycle ridership, enforcement can emphasize respect for all road users and promote a cycling-friendly culture. A supportive enforcement approach that encourages more people to cycle will require Regulatory Services, the Bike St. John's Advisory Committee, and the Royal Newfoundland Constabulary (RNC) work together.

As part of this collaborative approach, key enforcement and education initiatives can be identified. Some enforcement initiatives that may be considered include the following.

- Identify specific locations for targeted enforcement and education. Locations could include new bicycle routes or other areas where there are safety concerns.
- Use a reward 'ticketing' program that positively reinforces safe practices on the bicycle network.
- Collaborate with RNC to provide cycling education and outreach using bicycle patrols.
- Identify specific behaviours/infractions for people cycling and people driving for targeted enforcement, due to higher safety risk.

SECONDARY ACTION: *Regulatory Services, Bike St. John's Advisory Committee, and the RNC collaborate to identify key enforcement initiatives to improve cycling safety in the city and help increase ridership.*

56 http://www.bikestjohns.ca/

4.3.1 BICYCLE THEFT PREVENTION

Bicycle theft can be a significant barrier to cycling. People may choose not to ride a bicycle if they perceive a high risk that their bicycle will be stolen. A stolen bike can have particularly serious consequences for someone who relies on bicycling for transportation and can't easily afford to replace their bicycle.

Secure bicycle parking is one component of bicycle theft prevention discussed in more detail in Chapter 3, Section 3.2.4 End of Trip Facilities. Another is public awareness about strategies to avoid bicycle theft, proactive measures that increase the chance of stolen bicycle recovery, and what to do in case of bicycle theft. Educational programming outlined in the previous section could detail the following related information:

- How to securely lock a bicycle,
- What bicycle information to record in case of theft,
- How to report a stolen bicycle.

In addition, some police agencies offer their own voluntary bicycle registration programs or work in conjunction with partners like the 529 Garage bicycle registry[57]. These types of programs help to recover stolen bicycles and reunite them with their owners. Preventing bicycle theft and improving the recovery and return of stolen bicycles will require collaboration between the City and the RNC.

SECONDARY ACTION: *Work with the RNC and local bike shops to identify initiatives that prevent bicycle theft and facilitate the return of stolen bicycles.*

57 https://project529.com/garage

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
- Newfoundland and Labrador Highway Traffic Act, Licensing and Equipment Regulations, Consolidated Newfoundland and Labrador Regulation 1007/96

In some cases, this plan identifies amendments to sections in these documents to encourage cycling. The policy positions and associated actions proposed in this section are organized by topic.

5.1 MUNICIPAL BYLAWS, PLANS AND POLICIES

5.1.1 ENVISION ST. JOHN'S MUNICIPAL PLAN

Appendix E 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 policy applies more specifically than the rest, integrating the plan's recommended Bicycle Network into the Envision St. John's Draft Municipal Plan.

PRIMARY ACTION: *Include in Envision discussion on transportation the vision of a safe, inclusive, and convenient cycling network that is well-connected, attractive and reflective of the city's unique topography and climate. Also include a reference to the Bike St. John's Master Plan (this plan).*

5.1.2 BICYCLE COLLISION INFORMATION

The HTA 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.

SECONDARY ACTION: *Consider the need to 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.*

5.1.3 GRAND CONCOURSE TRAIL USE

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

> 10. Bicycles shall not be permitted on the Grand Concourse.[58]

PRIMARY ACTION: *Amend the St. John's Parks By-Law to permit bicycle riding on designated shared-use paths.*

Paths would be designated as shared-use by Transportation Engineering in consultation with the Park and Open Spaces Division. Designated paths would be posted with appropriate signs. Additional considerations in amending this By-Law are:

- Shared-use path user behaviour/responsibilities
- Racing on shared-use paths.

58 http://www.stjohns.ca/bylaws.nsf/nwByLawNum/1488

5.1.4 ON-STREET PARKING RESTRICTIONS

As part of implementing the 2009 Cycling Master Plan bicycle facilities, the City established parking restrictions on streets with bicycle lanes. On September 28, 2015, Council approved:

> *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* [59]

As discussed in section 7.2.1 several existing bike routes will be retired as part of this master plan. The bike routes where winter parking was of most concern are on this list. As such, the winter exemption from the parking ban is no longer necessary.

PRIMARY ACTION: *Eliminate the winter exemption of parking restrictions along bike lanes, as this master plan supersedes the 2009 Cycling Master Plan.*

5.1.5 SKATEBOARDS, IN-LINE SKATES AND SCOOTERS

The St. John's Skateboard, In-Line Skates and Scooter By-Law currently prohibits the use of skateboards, in-line skates and scooters on trails that this master plan recommends for shared-use.[60]

SECONDARY ACTION: *Review the Skateboard, In-Line Skates and Scooter By-Law for alignment with city goals.*

59 *Minutes, Regular Meeting, City Council, September 28, 2015 http://www.stjohns.ca/sites/default/files/files/minutes/Regular_Minutes_September%2028%2C%202015.pdf*

60 http://www.stjohns.ca/bylaws.nsf/nwByLawNum/1443

5.1.6 BIKE SHARE

Bike share systems are becoming increasingly common in North American cities. Convenient public access to bicycles helps increase cycling ridership among both residents and visitors. As technology and business models are still fast-evolving, it's important to review current best practices such as NACTO's Guidelines for the Regulation and Management of Shared Active Transportation[61] to support implementation.

ONGOING ACTION: *Support bike share initiatives through assistance with station locations and/or regulatory action.*

5.1.7 ELECTRIC AND POWER-ASSISTED BICYCLES

The City of St. John's does not have a By-Law about electric bicycles.

The HTA does not explicitly handle electric bicycle regulation or use.

The Federal Motor Vehicle Safety Regulations (C.R.C., c. 1038)62, under the Motor Vehicle Safety Act defines the requirements of a Power-Assisted Bicycle (PAB) in detail. This definition includes both the scooter/moped-style and bicycle-style (pedelec). Some "scooter style" designs are controversial with respect to cycling infrastructure as they appear to have characteristics similar to a motor vehicle.

ONGOING ACTION: *Support e-bike initiatives through assistance with station locations and/or regulatory action. Including consideration in tandem with electric vehicle initiatives.*

SECONDARY ACTION: *Develop a By-Law or advocate to Service NL to manage the use of e-bikes, particularly for "scooter style" designs.*

5.2 PROVINCIAL POLICY ALIGNMENT

5.2.1 PROVINCIAL CLIMATE CHANGE ACTION PLAN

A mode shift away from motor vehicle travel contributes to lower GHG emissions from the transportation sector. Increasing bicycle use is in alignment with Provincial Climate Change Action Plan's transportation objective, specifically Action 4.3.6 to "work with stakeholders to promote active modes of transportation within municipal and Provincial Government policies, practice and planning guidelines to enhance healthy, active communities."[63]

5.2.2 PROVINCIAL HEALTHY AGING POLICY FRAMEWORK

The implementation of this master plan aligns with Goal 11 of the Provincial Healthy Aging Policy Framework, which aims for "Improved access to transportation systems by older people" and includes "encouraging municipalities to develop age-

61 NACTO's Guidelines for the Regulation and Management of Shared Active Transportation, July 2018 https://nacto.org/wp-content/uploads/2018/07/NACTO-Shared-Active-Transportation-Guidelines.pdf

62 Federal Motor Vehicle Safety Regulations (C.R.C., c. 1038) https://lois-laws.justice.gc.ca/eng/regulations/C.R.C., c. 1038/page-1.html

63 Provincial Climate Change Action Plan

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

friendly transportation," and "promote recreation and leisure for the public as they age, through accessible trails and side roads."[64]

Newfoundland and Labrador have the most rapidly aging population in Canada. Evidence shows that living a more active lifestyle helps all people to age well.

SECONDARY ACTION: *Advocate for provincial funding of active transportation projects in alignment with provincial policies and plans such as the Climate Change Action Plan and the Healthy Aging Policy Framework.*

5.3 NEWFOUNDLAND AND LABRADOR HIGHWAY TRAFFIC ACT (HTA)

5.3.1 HELMETS

Section 129 of the HTA specifies that a person riding a bicycle must wear a regulation-compliant helmet with chin strap securely fastened. If the person riding a bicycle is under 16 years of age, helmet use is the responsibility of their parent or custodial guardian.[65]

Section 195 establishes the ability of the minister to prescribe standards or specifications for bicycle helmets.

Accordingly, section 44.1 of the HTA Licensing and Equipment Regulations, describes compliant helmets. It specifies that a person may be exempted from the requirement to wear a helmet if they hold a valid exemption certificate issued by a qualified medical or nurse practitioner or registrar.[66]

There is significant debate within the research community about the benefits of mandatory helmet laws such as this. Arguments both for[67] and against[68] rely on a variety of study designs and data analysis techniques that must be interpreted with an understanding of the explanatory limitations of each. While no clear consensus has been reached, there appears to be good evidence that an individual who wears a bicycle helmet will experience better outcomes overall if they are involved in a collision than if they had not worn the helmet. There also appears to be good evidence that mandatory helmet laws result in fewer people cycling than might have otherwise and that the public health impact of this is significant.

SECONDARY ACTION: *Engage the province in a discussion on the merits of a mandatory helmet laws with specific focus on the possibility of improving public health outcomes.*

5.3.2 IDAHO STOPS

The loss of forward momentum and balance present while moving, even slowly, makes the effort of stopping and starting a significant factor in the usability of a given cycling route. An Idaho Stop allows a cyclist to legally yield when approaching a stop sign instead of coming to a full stop. This maintains the right of way regime in place at an intersection while providing an improved cycling experience when the way is clear to

64 Provincial Healthy Aging Policy Framework, https://www.cssd.gov.nl.ca/publications/pdf/seniors/ha_policy_framework.pdf

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

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

67 www.helmets.org

68 www.cyclehelmets.org

proceed. An Idaho Stop recognizes that coming to a complete stop has a disproportionate impact on a person cycling compared to someone driving a motor vehicle. Currently the HTA does not directly address the use of 'Idaho stops' which means they are banned by omission.

SECONDARY ACTION: *Engage the province in a discussion on the merits of an Idaho Stop rule in the HTA.*

It would be best to review research on the safety performance of Idaho Stops as part of this action to ensure the latest data is used to support a decision.

5.3.3 RECOMMENDED CHANGES TO THE HTA

Updating the following topics in the HTA would support a more cycling friendly legislative environment.

SECONDARY ACTION: *Request that the province consider amending the following sections of the HTA.*

DEFINITION OF A BICYCLE

The HTA defines a bicycle[69] as "a device propelled by human power upon which a person may ride, having 2 wheels in tandem".

EXTERNAL ACTION: *Consider expanding the definition of a bicycle to include types with more than two wheels. (Service NL)*

This change could, for example, include tricycles, training wheels, cargo bicycles, adaptive bicycles, some recumbent bicycles, etc.

69 https://www.assembly.nl.ca/Legislation/sr/statutes/h03.htm

RIDING ON ROADWAYS

The HTA specifies that a person riding a bicycle:

> 129 (2) (b) subject to paragraph (a), shall ride as near as practicable to the right-hand curb or edge of a roadway;
>
> 129 (2) (c) shall not ride abreast of another person who is riding a bicycle upon a roadway;
>
> 129. (2) (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.

EXTERNAL ACTION: *Amend the HTA to allow a person riding a bicycle to occupy, without restriction, any part of the full lane. (Service NL)*

EXTERNAL ACTION: *Amend the HTA to allow bicycle riding two abreast, but not more. (Service NL)*

With respect to riding two abreast an amendment may also wish to consider variations in the regulations for narrow or busy roads, urban vs rural roads, or behaviour expected if a queue of vehicles develops behind people riding two abreast.

RIDING ON SIDEWALKS

The HTA specifies that:

> 129. (2) A person who is riding a bicycle,
>
> (a) shall not ride on a sidewalk.[70]

EXTERNAL ACTION: *Amend the HTA to allow children to cycle on a sidewalk. (Service NL)*

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

Many jurisdictions use an age (e.g., 14 and under) or wheel diameter (e.g. under 20 inches) to define who would qualify for this type of exemption. It is also important to consider:

- The interactions between people riding bicycles and pedestrians using a sidewalk in such an amendment.
- Either excluding the class of tricycles that can be controlled by an adult with a handle from the definition of a bicycle or, insuring it is covered by the definition of a child's bicycle permitted on the sidewalk.

TOWING OF BICYCLISTS

The HTA 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.

EXTERNAL ACTION: *Review the HTA, and amend as necessary, to ensure that both bicycle trailers and trailer bikes are not prohibited by this section on towing of bicyclists. (Service NL)*

BICYCLE-SPECIFIC INTERSECTION TREATMENTS AND ROADWAY FACILITIES

Certain types of bicycle-specific intersection treatments and roadway facilities such as bicycle signals, bicycle boxes, and bidirectional bike lanes have never been used in the province before.

EXTERNAL ACTION: *Review the HTA, and amend as necessary, to ensure that bicycle signals, bike boxes, bidirectional bike lanes and other intersection treatments or bike facilities are not prohibited. (Service NL)*

SHARED-USE CROSSINGS

The HTA does not address the use of a shared-use crossing, nor does the City of St. John's have an existing By-Law regulating these road crossings.

Shared-use crossings (also referred to as multi-use crossings or crossrides), are typically designated by markings called elephants' feet.



Elephants' Feet markings are used to indicate where cyclists are permitted to cross an intersection without dismounting and walking. 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, user

volume is low and both users share the crossing. In the case of separate pedestrian and cyclist crossrides, pedestrians and cyclists have their own crossing space. When crossing, cyclists yield to pedestrians, slow to a walking speed, and cross when it is safe to do so.

EXTERNAL ACTION: *Amend the HTA to include a legal definition of shared-use crossings, their design, proper use, and penalties for related offences. (Service NL)*

The Ontario Traffic Manual (OTM) Book 18 provides suitable guidance for design of these features. Items for consideration include but are not limited to:

- Ability of the City 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.
- Cyclists not entering a shared-use crossing if there is a vehicle travelling on the road that would not have sufficient time to stop.
- 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.

LICENSING AND REGISTRATION

Licensing and/or registration is sometimes called for in the public forum. 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., safety, compliance with traffic laws, bike theft).[71]

EXTERNAL ACTION: *Amend HTA section 169. (6) (c), removing reference to bicycle licensing and registration. (Service NL)*

5.3.4 OTHER HTA SECTIONS FOR INFO

The following topics related to cycling are included in the HTA and no changes are being recommended.

BRAKES

The HTA Licensing and Equipment Regulations, Consolidated Newfoundland and Labrador Regulation 1007/96 specifies that

> 25. (11) A bicycle shall be equipped with at least one brake capable of controlling the movement of and stopping the bicycle.[72]

LIGHTS

Under the HTA, the minister may make regulations for lights on bicycles under section 195 (1) (iii).

71 Bike Calgary. "Licensing." Bike Calgary. Accessed 5 March 2019. http://bikecalgary.org/licensing/.

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

The HTA Licensing and Equipment Regulations, Consolidated Newfoundland and Labrador Regulation 1007/96 specifies that:

> 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.[73]

DOORING

The HTA specifies that:

> 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.

PASSING

The HTA specifies that the driver of a vehicle overtaking a bicycle:

> 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.74

RACING ON HIGHWAYS

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

73 https://www.assembly.nl.ca/legislation/sr/regulations/rc961007.htm#22

74 https://www.assembly.nl.ca/Legislation/sr/statutes/h03.htm#96

6.0 EVALUATION

Measuring the progress of indicators such as quantity of riders, types of riders, number of bicycle collisions, 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. In addition, the following key targets (introduced in Chapter 2.0 Visions and Goals) will be used to monitor and assess progress of overall bicycle network implementation:

- ***Bicycle Ridership:*** Increase the number of people choosing to ride a bike in the City of St. John's.
- ***Cycling Culture:*** Create a cycling environment that is welcoming to all, so that people choosing to ride a bike are proportionally representative of city demographics (i.e., age groups, genders, and incomes using the bicycle network).
- ***Infrastructure Completion:*** Implement new sections of planned infrastructure each year (i.e., total # new kilometres completed).

6.1 MONITORING METHODS

There are six key methods of monitoring cycling activity as well as network safety and functionality: Census data, the citizen satisfaction survey, counts (both permanent and temporary), intercept surveys, collision/injury data, quantity of facilities completed/installed, and crowd-sourced data. When used together, these methods help to tell the story of cycling in St. John's.

6.1.1 FEDERAL CENSUS

Statistics Canada publishes "Journey to Work" data as part of the national census every 5 years. This includes the main modes of commuting which residents of a jurisdiction use. This information can 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 and for percentage of female ridership in people cycling to work. 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.

6.1.2 MUNICIPAL SURVEYS

The City of St. John's conducted a Citizen Satisfaction Survey in 2018[75] and a Demographic Survey in 2016[76]. These surveys provide input into the city's strategic planning and budgeting process with the objective of measuring progress over time. They gauge citizen awareness and perception of city services, and are sometimes used to collect demographic and travel choice information.

6.1.3 HOUSEHOLD TRAVEL SURVEY

One of the initiatives listed in the City of St. John's 2019 Action Plan[77] is to "Implement the Transportation Master Plan", which includes the action to "Complete household travel survey". Questions in the 2019 Household Travel Survey will request information about residents' cycling use. 2019 responses will serve as a baseline; while subsequent Household Travel Surveys continue to consistently ask this set of questions to measure changes in resident behaviour as the bicycle network matures.

6.1.4 CORDON & SPOT COUNTS

Counts monitor the number of people using a particular segment of the network over a certain period of time, relative to an established baseline count taken at the start of the monitoring program. During counting, data can also be collected about user behaviour.

- ***Cordon counts*** evaluate the number of people entering/exiting key locations within the network. This type of count has limited application in monitoring cycling activity as there are typically a large number of paths in/out of a particular area when using active modes.
- ***Spot counts*** can be done manually or with automatic counters at a particular point on a route. Ongoing, permanent counts are preferred for monitoring.

6.1.5 DATA COLLECTION TOOLS:

- ***Manual spot counts*** (counts completed in-person by a trained counter) can be used to monitor use during key time periods or full days. Manual counts also allow counters to record additional information such as turning movements and helmet use.
- ***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).
- ***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.
- ***Counters with digital totem displays*** help people to feel they are part of something greater and demonstrate people are using the network. This visible

75 http://www.stjohns.ca/publications/citizen-satisfaction-survey-2018

76 http://www.stjohns.ca/publications/city-stjohns-demographic-survey-results-2016

77http://stjohns.ca/sites/default/files/files/publication/2019%20Action%20Plan_0.pdf

counting tool is often paired with an online portal mirroring the data on the display. These features help build a positive cycling culture.

6.1.6 COUNT CONSIDERATIONS:

- Weather can significantly affect count data. Bicycle ridership varies with weather more than any other travel mode.
- Avoided spot counts during special events, festivals, or holidays.
- Some bicycle facilities see increased use on evenings and weekends, which is contrary to typical motor vehicle counts.
- Common time intervals for counts are morning and afternoon peak hours (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 trips. Counts for a 'typical summer day' use a 12 hour period (~7 am to 7 pm).
- To get a sense of how well the network is functioning, monitoring typically takes place along several different corridors.

6.1.7 INTERCEPT SURVEYS

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

6.1.8 ACCIDENT/COLLISION DATA

Collision data is shared with the City by Service NL, Motor Registration Division (MRD). Injury data may be available from Eastern Health (e.g., emergency rooms statistics). It is important to note bike-related near-misses, injuries and collisions tend to be significantly under-reported. City staff and MRD staff could work with Eastern Health to improve the detail available in bicycle incident data.

SECONDARY ACTION: *Investigate opportunities to improve data sharing between City, MRD, and Eastern Health relating to bicycle network safety (e.g., enforcement, injury, collision statistics).*

6.1.9 BIKE NETWORK COMPLETION

Monitoring the progress of network completion allows comparison of the length of bike routes installed to what is proposed for the full and backbone networks. Centreline kilometres is an appropriate unit of measure.

61.10 CROWD-SOURCED DATA

Bicycling related websites and applications such as Bikemaps.org, Strava, and Trailforks collect voluntary crowd-sourced data about bicycle routes, collisions, and/or near misses. It is important to note that this type of data is often skewed toward more confident riders; however, some apps like Strava have analysis tools to help compensate.

6.2 EVALUATION STRATEGY

6.2.1 BICYCLE RIDERSHIP

Central to the vision presented in Chapter 2 is the aim to "enable more people to ride a bicycle in St. John's." A key target against which plan implementation will be evaluated is the increase in the number of people choosing to cycle in St. John's. This may be measured using Census Journey to Work data, city-wide surveys, on-facility counts, and crowd-sourced information.

PRIMARY ACTION: *Complete the Household Travel Survey.*

EXISTING ROUTES

Counts that focus on the Backbone Network will provide a strong indicator of bicycle use. Baseline data can be established for use of existing bicycle facilities. The T'Railway and the Prince Phillip Drive shared-use paths are examples of established facilities for which count data could be collected for ongoing comparison.

PRIMARY ACTION: *Procure portable equipment suitable to count activity on shared-use paths, sidewalks, and/or dedicated cycling facilities.*

NEW ROUTES

All new Backbone Network projects would benefit from including permanent automatic count equipment as part of capital costs (projects identified in section 7.4).

New routes not on the backbone network may have regular spot counts; however, monitoring on the Backbone Network provides for primary information on activity trends.

ONGOING ACTION: *Install permanent count equipment at appropriate locations on Backbone Network links to count the number of bicycle riders using the network.*

This action includes implementation of the Bike St. John's Task Force Final Report recommendation to upgrade the T'Railway with automated monitoring equipment.

6.2.2 CYCLING CULTURE

Each year, qualitative information on perceptions of safety and network satisfaction could be collected by survey of attendees to bicycle related programs and events. Opinions on cycling and trails more generally can be gathered as part of more generic surveys.

ONGOING ACTION: *Solicit feedback from program/ event participants via survey.*

ONGOING ACTION: *Continue to include questions relevant to transportation planning and the bicycle network satisfaction in future municipal surveys.*

6.2.3 INFRASTRUCTURE COMPLETION

As the bicycle network is implemented, annual construction of the following facilities may be tracked:

- # km of shared-use paths
- # km of on-street bicycle facilities (by type)
- # multimodal hubs
- # bicycle parking facilities (by type)
- # bicycle maintenance and repair facilities (by type)

ONGOING ACTION: *Record the number of kilometres constructed of each facility type each year.*

6.2.4 REPORTING

Results from each aspect of the Evaluation Strategy outlined above need to be compiled in order to understand progress toward the vision of this plan.

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 section. As such only comparing against themselves is appropriate. Long term counts allow variations in activity due to external factors to be accounted for.

SECONDARY ACTION: *Complete an update to this master plan every 5 years that includes monitoring results.*

7.0 ACTION PLAN

Table 1 lists all actions recommended to achieve the plan's vision. They are organized according to the goals identified in Chapter 2.0. In this table a key City department is identified for each action, however, meaningful implementation of this master plan will require collaboration among City departments and with other organizations.

7.1 IMPLEMENTATION CATEGORIES

As discussed in Section 2.3, throughout this document actions are categorized into one of four groups:

PRIMARY ACTIONS: *these actions can be undertaken in the short term using current resources. Some actions require capital funding before they can proceed.*

SECONDARY ACTIONS: *these actions reflect a long list of work that can be completed to support cycling in St. John's. Unlike for Primary Actions, additional resources and/or commitment is required to deliver on these tasks. Most require funding from the operating budget to occur. This might take the form of an increase to a line item but, many require significant dedication of staff time.*

ONGOING ACTIONS: *these actions represent practices to be adopted at the staff level to ensure cycling is supported in accordance with this plan.*

EXTERNAL ACTIONS: *these actions are recommendations for external organizations to consider that would support cycling in the City of St. John's.*

It is important to note that without dedication of additional resources toward cycling the long list of **SECONDARY ACTIONS** is not expected to see progress toward implementation. Some actions in this category also have a much higher potential impact than others and, if Council were to identify additional resources, it would be necessary to define which actions to implement first.

It will also be important to ensure that external organizations are notified of the **EXTERNAL ACTIONS** that pertain to them and are requested to consider these actions.

With completion of a 5 year update to this master plan (as identified in Section 6.2.4) actions are likely to change categories as some are completed and/or priorities for implementation change.

TABLE 1 | ACTIONS SUMMARY

SECTION		ACTION TYPE	ACTION	LEAD DEPARTMENT(S)	RESOURCES
GOAL 1 INFRASTRUCTURE: BUILD AND MAINTAIN CYCLING INFRASTRUCTURE THAT IS INVITING FOR PEOPLE OF ALL AGES AND ABILITIES.					
3.1.5	Community Acceptance	ONGOING	Engage with communities as cycling infrastructure is implemented.	Engineering, Communications	Staff time + materials
3.2	Downtown	SECONDARY	Complete an area study to determine best approach for cycling accommodation in the Downtown.	Engineering	$35,000.00
3.3.1	Industry Guidance	PRIMARY	Incorporate cycling facility construction specifications into a future update of the St. John's Specifications Book.	Engineering	Staff time
3.3.4	Multimodal Hubs	SECONDARY	Install multi-modal hubs at key destinations where bicycle users can integrate with transit and other active transportation modes.	Public Works	Staff time + facilities
3.3.4.	Location Selection and Installation	PRIMARY	Install short-term bike parking where it can be integrated with ongoing street or sidewalk improvements.	Public Works	Capital allocation required.
		SECONDARY	Implement a request-a-rack program where people can submit desired bike rack locations for installation on public property.	Engineering, Public Works	$2400 per installation + staff time for program administration
		SECONDARY	Consult with the business community to develop a bike rack installation program to which businesses and property owners can apply.	Engineering, Public Works	Staff time
		SECONDARY	Install properly designed short and long-term bike parking options for visitors and employees at those municipal buildings open to the public.	Public Works	Staff time + facilities
		SECONDARY	Consider conversion of decommissioned parking meters into bike racks where appropriate.	Public Works	Staff time
		SECONDARY	Review Corporate and Operational Policy: 09-14-01 Special Events Policy, for amendments to support use of bicycles to attend events.	Community Services	Staff time
		PRIMARY	Update the Envision St John's Development Regulations to include minimum bicycle parking requirements.	Planning	Staff time
3.3.4	Showers and Change Facilities	PRIMARY	Update the City's development design guidance to ensure best practice for design and placement of bike racks.	Planning, Engineering	Staff time
		PRIMARY	Incorporate criteria for installation of long-term bicycle parking, showers and/or changing facilities in municipal development regulations.	Planning, Engineering	Staff time

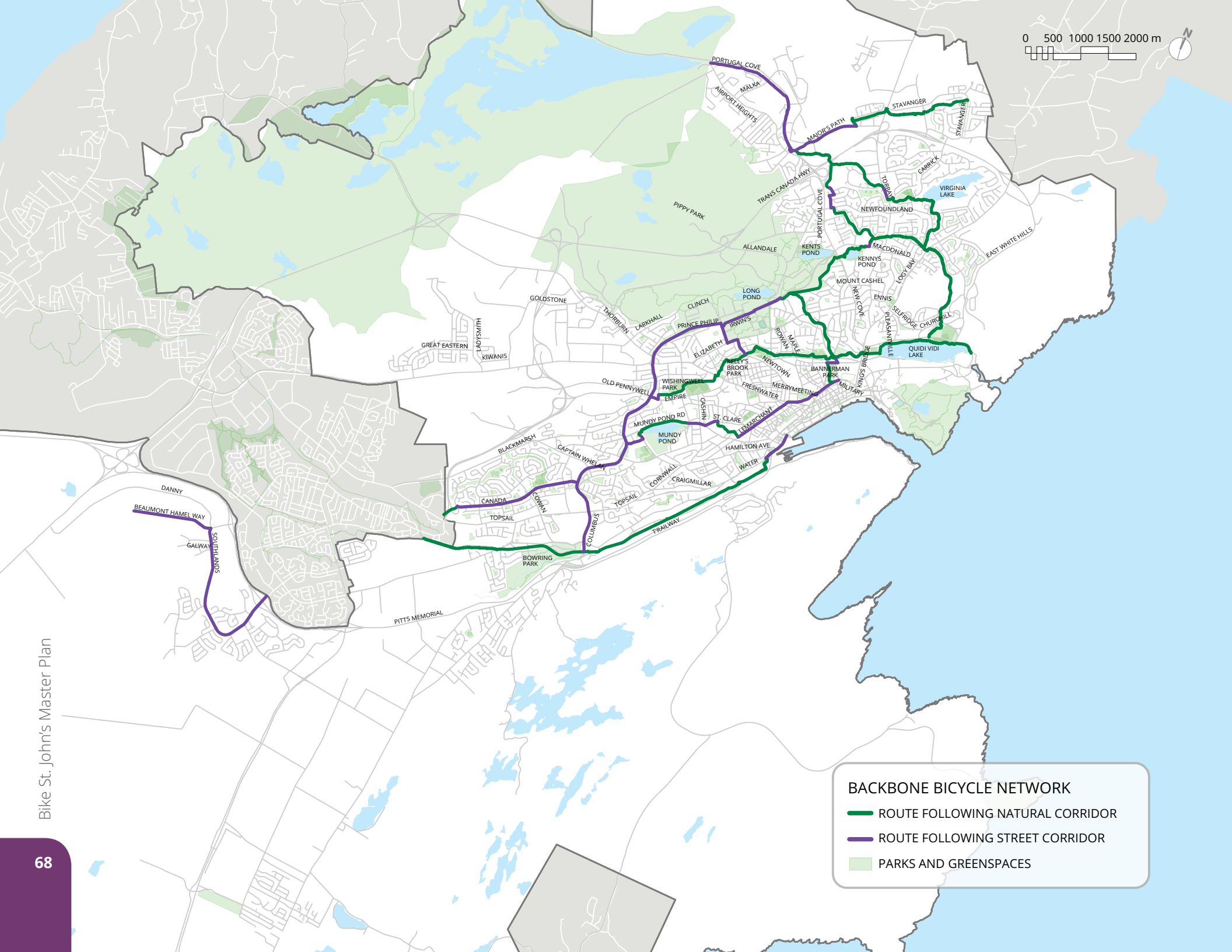
SECTION		ACTION TYPE	ACTION	LEAD DEPARTMENT(S)	RESOURCES
3.3.4	Showers and Change Facilities	SECONDARY	Complete an investigation into strategies that would encourage owners of commercial businesses and medium to high-density residential properties to install bicycle racks and storage facilities and amenities such as showers and change rooms.	Planning, Engineering	Staff time
3.3.5	Bike Maintenance and Repair Facilities	PRIMARY	Install 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, or multimodal hubs. (Capital allocation required.)	Public Works	Staff time + materials
3.3.6	Transit Integration	EXTERNAL	Consider allowing childrens' bikes aboard the bus and establish rules for circumstances when there is no rack space available.	Metrobus	Staff time
		EXTERNAL	As the cycling network matures and cycling demand grows, consider expansion of timeframe for bus bike racks from May 1st to November 30th to year-round.	Metrobus	Staff time + facilities
3.4.3	Mapping	PRIMARY	Import the Bicycle Network map and add to City of St. John's Mapcentre.	Corporate Information Services	Staff time
		ONGOING	Update Bicycle Network GIS data on a regular basis so up-to-date mapping is available on Mapcentre and any print versions.	Corporate Information Services	Staff time
3.5	Maintenance	ONGOING	City staff collaborate to ensure appropriate maintenance of cycling facilities across the city.	Engineering, Public Works, Parks, Planning	Staff time
3.5.1	Stormwater Management	PRIMARY	Review the design of standard drainage grates. Evaluate suitability of more bicycle-friendly designs such as side inlet or hybrid options.	Engineering, Public Works	Staff time
3.5.1	Pavement Markings	SECONDARY	Review Corporate and Operational Policy: 07-02-01 Traffic Markings - Street Line Painting, for amendments to address pavement markings for cycling facilities.	Public Works and Parks	Staff time
3.5.2	Spring / Summer / Fall	SECONDARY	Update street sweeping practices to include consideration of on-street cycling facilities.	Public Works	Staff time
		ONGOING	Inspect and trim vegetation along bicycle facilities annually.	Public Works and Parks	Staff time
3.5.2	Winter	SECONDARY	Develop a winter maintenance strategy for the bicycle network.	Public Works and Parks	Staff time
		SECONDARY	Update snow clearing policies to include consideration of all cycling facilities.	Public Works and Parks	Staff time

SECTION		ACTION TYPE	ACTION	LEAD DEPARTMENT(S)	RESOURCES
3.5.2	Winter	SECONDARY	Review Corporate and Operational Policy: 08-01-01 Snow Clearing Priority (Streets and Sidewalks), 08-01-02 Street Snow Clearing, 08-01-03 Ice Control, and 08-01-04 Sidewalks Snow Clearing for amendments to address snow clearing practices on cycling facilities.	Public Works and Parks	Staff time
3.5.3	Temporary Conditions	SECONDARY	Update the City of St John's Traffic Control Manual to include interruptions to cycling facilities in Traffic Control Plans.	Engineering	Staff time
		ONGOING	Account for accommodation of bicycle route disruptions / closures / detours in street excavation permitting.	Public Works	Staff time
		SECONDARY	Develop a strategy for communication of bicycle network disruptions, closures, or detours.	Communications	Staff time
GOAL 2 PROGRAMS: DEVELOP A CYCLING-FRIENDLY CULTURE WITH ENCOURAGEMENT, EDUCATION AND ENFORCEMENT.					
4.1.1	Transportation Demand Management	SECONDARY	Develop a TDM checklist for major employers and post-secondary institutions. TDM program implementation should be monitored and successes advertised.	Engineering	Staff time
		PRIMARY	Lead by example and implement TDM measures for City buildings.	Engineering	Staff time
4.1.2	Bike Month	SECONDARY	Participate in delivery of Bike Month, Bike Week, BikeFest, Open Streets, or similar events with support of community partners, to promote and celebrate cycling and active transportation.	Community Services	Staff time + Bikefest: $20,000 + additional program costs
4.1.3	Safe Routes to School	ONGOING	Support programming that encourages youth to ride bicycles to school.	Community Services	Staff time + program costs
		SECONDARY	Work with local schools to coordinate delivery of in-school programming regarding cycling best practice.	Community Services	Staff time + program costs
4.2.1	Bicycle Ambassadors	SECONDARY	Hire a bicycle ambassador seasonally to promote and educate all road users about bicycle safety.	Community Services	Staff time + program costs
4.2.4	Road User Education	EXTERNAL	Amend the provincial Road User Guide to address issues related to cyclists and pedestrians.	Service NL	
4.2.5	New Bicycle Route Education Campaigns	SECONDARY	Develop and deliver educational campaigns in connection with the opening of new bicycle facilities.	Community Services	Staff time + program costs
4.2.6	Educational Materials	ONGOING	Update and maintain the content of www.bikestjohns.ca.	Communications	Staff time

SECTION		ACTION TYPE	ACTION	LEAD DEPARTMENT(S)	RESOURCES
4.3	Enforcement	SECONDARY	Regulatory Services, Bike St. John's Advisory Committee, and the RNC collaborate to identify key enforcement initiatives to improve cycling safety in the city and help increase ridership.	Regulatory Services	Staff time
4.3.1	Bicycle Theft Prevention	SECONDARY	Work with the RNC and local bike shops to identify initiatives that prevent bicycle theft and facilitate the return of stolen bicycles.	Regulatory Services	Staff time
GOAL 3 POLICY: ADOPT POLICIES AND A LEGAL FRAMEWORK THAT SUPPORT A VIBRANT CYCLING ENVIRONMENT.					
5.1.1	Envision St. John's Municipal Plan	PRIMARY	Include in Envision discussion on transportation the vision of a safe, inclusive, and convenient cycling network that is well-connected, attractive and reflective of the city's unique topography and climate. Also include a reference to the Bike St. John's Master Plan (this plan).	Planning	Staff time
5.1.2	Bicycle Collision Information	SECONDARY	Consider the need to 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.	Engineering, Parks, Corporate Information Services	Staff time
5.1.3	Grand Concourse Trail Use	PRIMARY	Amend the St. John's Parks By-Law to permit bicycle riding on designated shared-use paths.	Public Works and Parks	Staff time
5.1.4	On-street parking restrictions	PRIMARY	Eliminate the winter exemption of parking restrictions along bike lanes, as this master plan supersedes the 2009 Cycling Master Plan.	Engineering	Staff time
5.1.5	Skateboards, in-line skates and scooters	SECONDARY	Review the Skateboard, In-Line Skates and Scooter By-Law for alignment with city goals.	Planning	Staff time
5.1.6	Bike Share	ONGOING	Support bike share initiatives through assistance with station locations and/or regulatory action.	Public Works	Staff time
5.1.7	Electric and power-assisted bicycles	ONGOING	Support e-bike initiatives through assistance with station locations and/or regulatory action. Including consideration in tandem with electric vehicle initiatives.	Engineering, Public Works, Parks, Planning	Staff time
		SECONDARY	Develop a By-Law or advocate to Service NL to manage the use of e-bikes, particularly for "scooter style" designs.	Engineering, Public Works, Parks, Planning	Staff time
5.2.2	Provincial Healthy Aging Policy Framework	SECONDARY	Advocate for provincial funding of active transportation projects in alignment with provincial policies and plans such as the Climate Change Action Plan and the Healthy Aging Policy Framework.	Engineering	Staff time

SECTION		ACTION TYPE	ACTION	LEAD DEPARTMENT(S)	RESOURCES
5.3.1	Helmets	SECONDARY	Engage the province in a discussion on the merits of a mandatory helmet laws with specific focus on the possibility of improving public health outcomes.	Engineering	Staff time
5.3.2	Idaho Stops	SECONDARY	Engage the province in a discussion on the merits of an Idaho Stop rule in the HTA.	Engineering	Staff time
5.3.3	Recommended Changes to the HTA	SECONDARY	Request that the province consider amending the following sections of the HTA.	Engineering	Staff time
5.3.3	Definition of a bicycle	EXTERNAL	Consider expanding the definition of a bicycle to include types with more than two wheels.	Service NL	Staff time
5.3.3	Riding on roadways	EXTERNAL	Amend the Highway Traffic Act to allow a person riding a bicycle to occupy, without restriction, any part of the full lane.	Service NL	Staff time
		EXTERNAL	Amend the Highway Traffic Act to allow bicycle riding two abreast, but not more.	Service NL	Staff time
		EXTERNAL	Amend the Highway Traffic Act to allow children to cycle on a sidewalk.	Service NL	Staff time
5.3.3	Towing of bicyclists	EXTERNAL	Review the Highway Traffic Act, and amend as necessary, to ensure that both bicycle trailers and trailer bikes are not prohibited by this section on towing of bicyclists.	Service NL	Staff time
5.3.3	Bicycle-specific intersection treatments and roadway facilities	EXTERNAL	Review the Highway Traffic Act, and amend as necessary, to ensure that bicycle signals, bike boxes, bidirectional bike lanes and other intersection treatments or bike facilities are not prohibited.	Service NL	Staff time
5.3.3	Shared-use crossings	EXTERNAL	Amend the Highway Traffic Act to include a legal definition of shared-use crossings, their design, proper use, and penalties for related offences.	Service NL	Staff time
5.3.3	Licensing and registration	EXTERNAL	Amend Newfoundland and Labrador Highway Traffic Act section 169. (6) (c), removing reference to bicycle licensing and registration.	Service NL	Staff time
GOAL 4 EVALUATION: MONITOR AND ASSESS PROGRESS OF NETWORK IMPLEMENTATION AGAINST KEY TARGETS.					
6.4	Accident / Collision Data	SECONDARY	Investigate opportunities to improve data sharing between City, MRD, and Eastern Health relating to bicycle network safety (e.g., enforcement, injury, collision statistics).	Engineering, Corporate Information Services	Staff time
6.5.1	Bicycle Ridership	PRIMARY	Complete the Household Travel Survey.	Planning, Engineering & Regulatory Services	Staff time + survey costs

SECTION		ACTION TYPE	ACTION	LEAD DEPARTMENT(S)	RESOURCES
6.5.1	Existing Routes	PRIMARY	Procure portable equipment suitable to count activity on shared-use paths, sidewalks, and/or dedicated cycling facilities.	Engineering, Public Works	Staff time + equipment costs (e.g., EcoCounter Mobile MULTI ~ CAD $4,650 per unit).
6.5.1	New Routes	ONGOING	Install permanent count equipment at appropriate locations on Backbone Network links to count the number of bicycle riders using the network. There are a wide variety of equipment types and associated costs depending on whether counters are permanent or mobile, differentiate between cyclists or pedestrians, detect direction, and provide count displays.	Engineering, Public Works	Staff time + equipment costs (e.g., EcoCounter MULTI in a Natural Post ~CAD $5,000, while the Eco-DISPLAY Classic costs approx. $25,000 to $40,000 per unit with install).
6.5.2	Cycling Culture	ONGOING	Solicit feedback from program/event participants via survey.	Engineering, Communications, Community Services	Staff time + survey costs
		ONGOING	Continue to include questiosn relevant to transportation planning and the bicycle network satisfaction in future municipal surveys.	Planning, Engineering & Regulatory Services	Staff time + survey costs
6.5.3	Bicycle Network Building	ONGOING	Record the number of kilometres constructed of each facility type each year.	Engineering	Staff time
6.5.4	Reporting	SECONDARY	Complete an update to this master plan every 5 years that includes monitoring results.	Engineering	Staff time
IMPLEMENTATION.					
7.2	Bicycle Network Implementation	PRIMARY	Update design specification to include a 1.5m hard surface shoulder when building or rebuilding key rural roads.	Engineering	Staff time
7.2.1	Using Construction Opportunities	ONGOING	Consider inclusion of cycling facilities in all infrastructure projects.	Engineering, Public Works, Planning	Staff time + capital allocation
7.3.2	Old Route Retirement	PRIMARY	Remove signs and bicycle pavement markings on 2009 Cycling Master Plan routes that are no longer incorporated in the 2019 network.	Public Works	Staff time
7.3.3	New Route Activation	SECONDARY	Promote new cycling facilities as they are added to the network.	Engineering, Communications, Community Services	Staff time + program costs
7.4	Old Route Retirement	PRIMARY	Construct the three identified catalyst projects with priority over other independent cycling infrastructure projects.	Engineering, Public Works	Staff time + capital allocation


0 500 1000 1500 2000 m
N
PORTUGAL COVE
MALKA
AIRPORT HEIGHTS
MAJOR'S PATH
STAVANGER
STAVANGER
CARRICK
TORBAY
VIRGINIA LAKE
NEWFOUNDLAND
TRANS CANADA HWY
PIPPY PARK
PORTUGAL COVE
ALLANDALE
KENTS POND
KENNYS POND
MACDONALD
LOGY BAY
EAST WHITE HILLS
MOUNT CASHEL
NEW COVE
ENNIS
SELFRIDGE
CHURCHILL
PLEASANTVILLE
QUIDI VIDI LAKE
LONG POND
CLINCH
GOLDSTONE
THORBURN
LARKHALL
PRINCE PHILIP
IRWIN'S
ROWAN
MAPLE
KING'S BRIDGE
GREAT EASTERN
LADYSMITH
KIWANIS
ELIZABETH
KELLY'S BROOK PARK
NEWTOWN
BANNERMAN PARK
OLD PENNYWELL
WISHINGWELL PARK
EMPIRE
FRESHWATER
MERRYMEETING
MILITARY
CASHIN
MUNDY POND RD
ST. CLARE
LEMARCHANT
MUNDY POND
HAMILTON AVE
BLACKMARSH
CAPTAIN WHELAN
CORNWALL
CRAIGMILLAR
WATER
CANADA
COWAN
TOPSAIL
TOPSAIL
COLUMBUS
TRAILWAY
BOWRING PARK
DANNY
BEAUMONT HAMEL WAY
GALWAY
SOUTHLANDS
PITTS MEMORIAL
BACKBONE BICYCLE NETWORK
ROUTE FOLLOWING NATURAL CORRIDOR
ROUTE FOLLOWING STREET CORRIDOR
PARKS AND GREENSPACES

7.2 BICYCLE NETWORK IMPLEMENTATION

The recommended full cycling network is shown in Figure 3. This represents a set of comfortable, connected, convenient, and attractive bicycle routes that serve the vision of this plan.

Within the full network, a subset backbone network is identified that supports commuter needs, along with recreational and social experiences. Backbone network routes are priority. The backbone network is an important tool for implementation; it is strategic to prioritize a core citywide network of comfortable and attractive bike routes ensuring basic connectivity across the city. Figure 13 shows the routes of the backbone network. It includes shared-use paths along natural corridors and on-street bicycle facility links where separated paths are not possible.

The full network is supplemented by an extended cycling network shown in Appendix D. The additional links in this extended network include all potential routes identified during the plan development process. While these links are not included in the full cycling network or prioritized in this plan, they represent existing ideas about routes with good potential.

The extended network ideas can be drawn upon when considering routes supplementary to this plan's full network, in order to achieve an ideal density of routes with bicycle facilities.[78] People who bicycle are not likely to detour more than about 400m to find a route with bicycle facilities.[79] It is important to consider routes on the extended network map as opportunities arise through construction, development, or other projects.

78 Many jurisdictions target a goal of having cycling facilities no further apart than every 400m in urban areas.

79Winters, M., Teschke, K., Grant, M., Setton, E., Brauer, M. 2010. "How far out of the way will we travel? Built environment influences on route selection for bicycle and car travel." Transportation Research Record.

In addition to the routes identified as part of this plan, **Bicycle-accessible shoulders** are important to facilitate long distance cycling. Key rural roads benefit from these shoulders for maintenance and emergency purposes in addition to providing a cycling space. Some examples of key rural roads are portions of:

- Torbay Road
- Portugal Cove Road
- Thorburn Road
- Mount Scio Road
- Blackhead Road
- Bay Bulls Road
- Ruby Line
- Maddox Cove Road

PRIMARY ACTION: *Update design specification to include a 1.5m hard surface shoulder when building or rebuilding key rural roads.*

7.2.1 USING CONSTRUCTION OPPORTUNITIES

It is very efficient to construct cycling facilities as part of other construction activity on existing roads and trails. Streets with routes included in the full network are priority candidates to include bike infrastructure as part of reconstruction. Incorporating cycling facilities where appropriate along streets identified in the Extended Bicycle Network, shown in Figure 24, is also important to consider as part of road construction or rehabilitation projects. Once identified each project can then consider the feasibility and desirability of adding or enhancing bicycle facilities.

FIGURE 13 | BACKBONE NETWORK ROUTES

ONGOING ACTION: *Consider inclusion of cycling facilities in all infrastructure projects.*

At the time of project implementation, a key consideration is network connectivity. Despite the possibility of being isolated, the overall network would benefit if route segments that can be constructed with other projects are constructed. An isolated segment created this way would not be designated as part of the cycling network until such time as it is connected to a larger network. This approach requires care to ensure that unnecessary impacts on local residents are not created by any "future" cycling facilities.

7.3 PUBLIC ENGAGEMENT DURING ROUTE IMPLEMENTATION

7.3.1 DESIGN AND CONSTRUCTION

In areas where there are options to explore, public engagement provides opportunity for people to give input about facility design and construction. Strategies at this stage may include online notices, surveys, mail-outs to neighbouring residents, and public meetings. Key facts about the new bicycle facilities can be presented, as well as any impacts to vehicle traffic flow, drop off or delivery areas, pedestrian infrastructure, intersections, parking. As noted in section 3.1.5 this type of consultation forms part of any implementation project.

7.3.2 OLD ROUTE RETIREMENT

The following links were signed and painted during implementation of the 2009 Cycling Master Plan. They do not form part of the new network and as such can be reverted to their previous configuration.

- Frecker Drive from Blackmarsh Road to Hamlyn Road
- Hamlyn Road
- Hogan Street, Anspach Street, Mercer's Lane
- Blackhead Road, Southside Road
- Blackmarsh Road, Bennett Avenue
- Beaumont Street, Pleasant Street, Patrick Street
- Job Street
- Merrymeeting Road from Freshwater Road to Newtown Road
- O'Leary Avenue
- Wicklow Street
- East White Hills Road
- Quidi Vidi Village Road, Forest Road
- Signal Hill Road

PRIMARY ACTION: *Remove signs and bicycle pavement markings on 2009 Cycling Master Plan routes that are no longer incorporated in the 2019 network.*

7.3.3 NEW ROUTE ACTIVATION

New bicycle facility activation provides another opportunity for public engagement. A marketing campaign may be supplemented by an on-the-ground bicycle team (e.g., bicycle ambassadors) that helps all route users understand proper use of the new facilities and any new traffic patterns.

SECONDARY ACTION: *Promote new cycling facilities as they are added to the network.*

7.3.4 BUILDING A BACKBONE NETWORK

The Backbone Network is an important implementation tool. It strategically prioritizes a minimum network of comfortable and attractive bike routes across the city (Figure 13). Backbone routes are primarily comfortable shared-use paths meant to encourage people to cycle for both recreation and commuter purposes. These comfortable routes with highly visible street crossings are meant to increase ridership and build support for network growth.

Backbone routes are prioritized using the adjacent Table 2; three Catalyst Projects are also chosen from this list to launch bicycle network implementation. This project prioritization table evaluates backbone routes based on their cycling potential, network connectivity, cycling demand, and constructability. Routes are listed in order from highest to lowest priority. Emphasized routes represent the three Catalyst Projects, for which 33% design is completed as part of this master plan (discussed further in Sections 7.6.1).

Cycling Potential: *How comfortable and enjoyable would this route be? How attractive would it be to concerned riders?* This criteria considers a route's separation from motor vehicles, the attractiveness of the natural and built environment. It represents the factors affecting a person's physical and mental exertion such as steep grades, poor visibility, frequent stopping at intersections, and route straightness.

Network Connectivity: *How well does it contribute to network building?* Projects score higher if they cross major barriers and if they connects to existing routes.

Cycling Demand: *How many people are directly served by is this route?* Projects score higher if they have high population density and serve key destinations along a route. Social equity is also integrated in this criteria: areas with lower existing investment score higher.

Constructability: *How easy to achieve is this project?* This criteria considers community acceptance, feasibility, and cost. For example, removing on-street parking would contribute to a lower score in this criteria.

Although the Backbone Network, prioritization table and catalyst projects are important tools, they do not exclusively define how the bike network is built. A key tenant of implementation will be to take advantage of opportunities presented by other municipal works and development activity to build the full network.

ROUTE	FROM	TO	CYCLING POTENTIAL	NETWORK CONNECTIVITY	CYCLING DEMAND	CONSTRUCT-ABILITY
KELLY'S BROOK TRAIL	**COLUMBUS DRIVE**	**KINGS BRIDGE ROAD**				
RENNIE'S RIVER TRAIL	**PORTUGAL COVE ROAD**	**PRINCE PHILIP DRIVE @ ALLANDALE ROAD**				
VIRGINIA RIVER TRAIL	**QUIDI VIDI LAKE**	**PENNY CRESCENT**				
OFF-STREET PRINCE PHILLIP DRIVE AND MACDONALD DRIVE	ALLENDALE ROAD / RENNIE'S RIVER TRAIL	VIRGINIA RIVER TRAIL NEAR LOGY BAY ROAD				
QUIDI VIDI LAKE TRAIL (NORTH SIDE)	KINGS BRIDGE ROAD	CADET ROAD				
MUNDY POND ROAD + ST. CLARE AVENUE (VIA CLOSED SCHOOLS)	**COLUMBUS DRIVE**	**LEMARCHANT ROAD**				
NEWTOWN ROAD + MUN PATHS	EMPIRE AVENUE TRAIL	THE WORKS @ MUN				
CANADA DRIVE	(TEAM GUSHUE HIGHWAY)	COLUMBUS DRIVE				
MUN // PRINCE PHILIP DRIVE	WESTERLAND ROAD	ALLENDALE ROAD				
WATER STREET	T'RAILWAY	HARBOUR DRIVE				
MAJORS PATH	PORTUGAL COVE ROAD/ VIRGINIA RIVER TRAIL	TORBAY ROAD				
LEMARCHANT ROAD + HARVEY ROAD+ MILITARY ROAD	ST. CLARE AVENUE	KINGS BRIDGE ROAD/ CAVENDISH SQUARE				
BANNERMAN + HILL (ROUTE TBD)	EMPIRE TRAIL	MILITARY ROAD				
COLUMBUS DRIVE	T'RAILWAY	CAPTAIN WHELAN DRIVE				
NEIGHBOURHOOD PATHS // PORTUGAL COVE ROAD	TRANS CANADA HIGHWAY / VIRGINIA RIVER TRAIL	MACDONALD DRIVE				

TABLE 2 | PROJECT PRIORITIZATION ROUTES

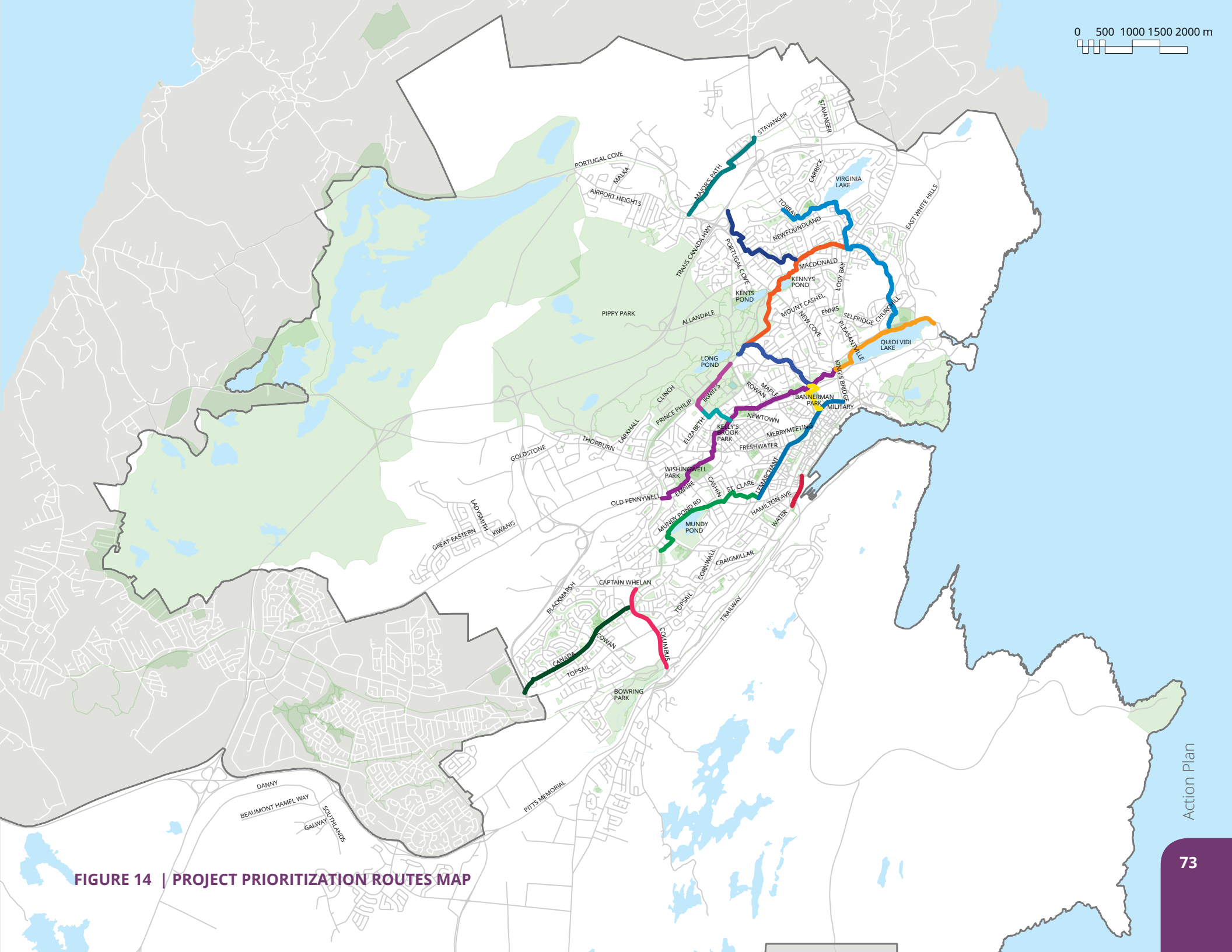


FIGURE 14 | PROJECT PRIORITIZATION ROUTES MAP

7.4 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 City well, addressing presently underserved areas and resulting in increased bicycle 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.

PRIMARY ACTION: *Construct the three identified catalyst projects with priority over other independent cycling infrastructure projects..*

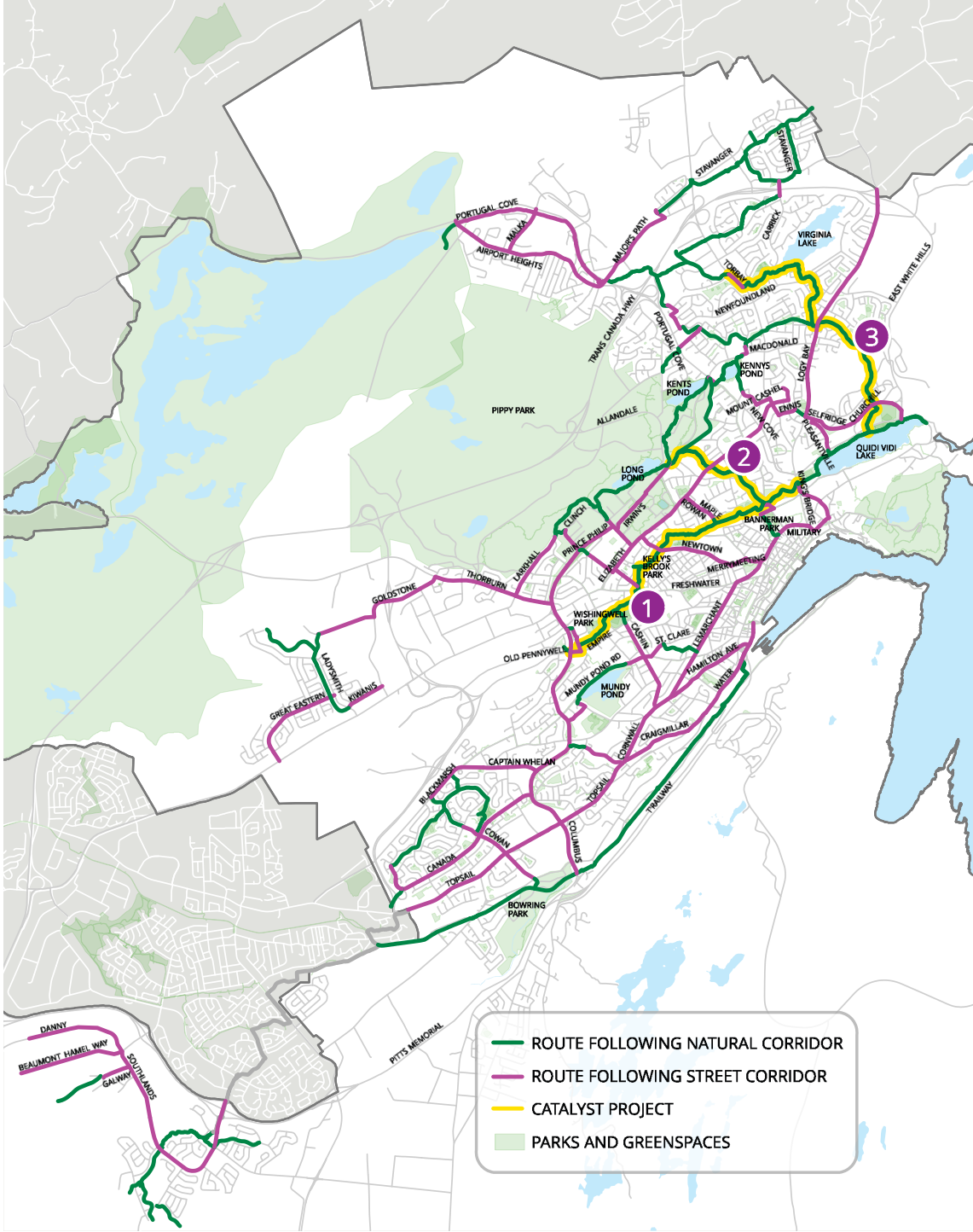


FIGURE 15 | CATALYST PROJECTS

7.4.1 CATALYST PROJECT #1 - KELLY'S BROOK TRAIL

DESCRIPTION:

The existing walking trail from Kings Bridge Road to Columbus Drive will be upgraded to an asphalt shared-use path. The trail links several neighbourhoods through an important east-west greenway that largely parallels Empire Avenue.

Residents preferred this route because of its ability to connect people to essential academic, civic, and recreational destinations (for example MUN, the Framers Market, and parks respectively). The trail enhances equitability, linking western and downtown neighbourhoods.

EXISTING ISSUES:

The existing walking trail provides an ideal surface for a comfortable shared-use path. For the most part, trail width can expand to the required 3.0 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 continuous safe and comfortable trail.

WHY IT'S IMPORTANT:

- East / west connector
- Links several neighbourhoods
- Reaches many essential destinations
- More comfortable topography
- Comfortable route, almost entirely separated from motor vehicle traffic

COST ESTIMATE:

- $2.0M for 4.8km







7.4.2 CATALYST PROJECT #2 - RENNIE'S RIVER TRAIL

DESCRIPTION:

This project upgrades the existing walking trail to an asphalt shared-use path connecting the proposed Kelly's Brook shared-use path (Catalyst Project #1) at Portugal Cove Road to Prince Philip Drive. The existing trail sits within a beautiful greenway and runs north-south, adjacent to Rennie's River.

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

EXISTING ISSUES:

In many areas, the existing trail falls within a narrow corridor, includes sections of boardwalk that are too narrow for 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 3.0 meter-wide shared-use path.

WHY IT'S IMPORTANT:

- Connects future 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:

- $1.2M for 2.0km







7.4.3 CATALYST PROJECT #3 - VIRGINIA RIVER TRAIL

DESCRIPTION:

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.

This project proposes to transform the existing walking trail to a 3.0 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 it is not fiscally responsible to remove and replace these immediately. Therefore, signs are required to inform residents that 'reduced-width sections' are ahead.

WHY IT'S IMPORTANT:

- South-east to north-west connection
- More linear connection for adjacent neighbourhoods
- Connects Airport Heights to Quidi Vidi Lake on shared-use paths via existing section of Virginia River Trail.

COST ESTIMATE:

- $2.0M for 5.0km







7.5 FUNDING

Implementation of this plan's bicycle network and recommended programs requires a combination of staff time, capital budget funds, outside funding, and in-kind contributions. Operating budget funds will be required to complete actions that require staff time or materials, such as maintenance activity. Capital budget funds will be required to build the backbone network. In order to reduce costs of implementation, the City can leverage planned street rehabilitation projects, traffic calming projects, and intersection improvements, capitalizing on these opportunities to add bicycle facilities.

Outside sources of funding are available at federal, provincial, and local levels, as well as through non-governmental organizations. Grants and in-kind contributions can be explored with the aforementioned government partners as well as post-secondary institutions, schools, health organizations, the RNC, bicycle advocacy organizations, other non-profits, and private land owners.

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

7.5.1 FEDERAL FUNDING SOURCES

CANADA-NEWFOUNDLAND GAS TAX FUND[80]

- ***Amount:*** St. John's 2019-20 allocation: $4,672,474; 2020-21 allocation: $4,577,822; 2021-22 allocation: $4,785,905; 2022-23 allocation: $4,785,905; 2023-24 ***allocation:*** $4,993,988.
- ***Frequency of funding allocations:*** Annual.
- ***Term:*** Administrative Agreement between Canada and Newfoundland and Labrador in effect until March 31, 2024, unless renewed.
- ***Process:*** Municipality enters into an agreement with the Province and submits a Capital Investment Plan and a detailed cost estimate, supported by a resolution of Council.
- ***Eligible project categories:*** active transportation, water, wastewater, community energy systems, solid waste, and capacity building.

7.5.2 PROVINCIAL FUNDING SOURCES

MULTI-YEAR CAPITAL WORKS FUNDING[81]

- ***Term:*** three-year blocks of funding.
- ***Eligible project categories:*** water and/or sewer, solid waste management, paving and/or road construction, municipal buildings, and recreation.

80 https://www.mae.gov.nl.ca/for/gta.html#agree

81 https://www.mae.gov.nl.ca/capital_works/cwfunding.html

COMMUNITY HEALTHY LIVING FUND[82]

- ***Amount:*** varies (small infrastructure maximum of $10,000; program maximum of $10,000 per program for up to 3 programs).
- ***Application deadline:*** date program launches through January 31st.
- ***Frequency of funding allocations:*** Annual.
- ***Eligible project categories:*** projects, programs and initiatives that demonstrate direct measurable results towards the targets outlined in "The Way Forward", specifically to increase physical activity and the rate of vegetable and fruit consumption.

COMMUNITY TRANSPORTATION PROGRAM[83]

- ***Amount:*** maximum of $100,000.
- ***Frequency of funding allocations:*** annual.
- ***Eligible project categories:*** supporting alternate transportation services for individuals who experience barriers to accessible, affordable and inclusive transportation.

82 https://www.cssd.gov.nl.ca/grants/chl_fund.html

83 https://www.cssd.gov.nl.ca/grants/nl_transportation.html

7.5.3 OTHER FUNDING SOURCES

ATLANTIC CANADIAN OPPORTUNITIES AGENCY[84]

- ***Innovative Communities Fund:*** funding that invests in strategic projects that build long-term employment and economic capacity in rural communities, and, selectively, urban initiatives that stimulate the competitiveness and vitality of rural communities.
- ***•ICF Objectives:*** diversify and enhance the economies of Atlantic communities. ICF capitalizes on the opportunities and strengths that exist in these communities to:
  - develop competitive, productive, strategic industry sectors;
  - strengthen community infrastructure in rural communities; and
  - invest in projects that enhance communities' capacity to overcome economic development challenges and take advantage of their strengths, assets and opportunities presented.
- ***Eligibility:*** municipalities and their agencies are eligible, as well as other non-commercial/not-for-profit organizations or co-operatives.
- ***Amount:*** assistance is non-repayable, and amounts depend on a need assessment.
- ***To Apply:*** contact ACOA office (Newfoundland and Labrador: 1-800-668-1010).

84 https://www.canada.ca/en/atlantic-canada-opportunities.html

7.5.4 TRANSPORTATION NETWORKS AND COMMUTING OPTIONS, GREEN MUNICIPAL FUND, FEDERATION OF CANADIAN MUNICIPALITIES

PILOT PROJECT[85]

- ***Amount:*** Up to $350,000 to cover up to 50% of eligible costs.
- ***Deadline to apply:*** Applications accepted year round, though offer closes when all funding has been allocated.
- ***Eligibility:*** pilot projects that reduce pollution in Canadian communities by improving transportation systems and networks or encouraging people to switch to less polluting transportation options.

CAPITAL PROJECT[86]

- ***Amount:*** projects receive low-interest loan of up to $5 million ($10 million for high ranking projects) and grant worth 15% of the loan; cover up to 80% of eligible costs.
- ***Deadline to apply:*** Two-stage application process, 1) initial review form due August 1 2019, 2) application by invitation only due October 1 2019.
- ***Eligibility:*** capital projects that reduce pollution in Canadian communities by improving transportation systems and networks or encouraging people to switch to less polluting transportation options.

85https://fcm.ca/en/funding/gmf/pilot-project-transportation-networks-commuting-options

86https://fcm.ca/en/funding/gmf/capital-project-transportation-networks-commuting-options

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APPENDIX A | BACKGROUND DATA AND REPORTS REVIEW

A review of previously completed plans and reports provided important context for the development of a new bike master plan for St John's.. The following documents were included in this review.

- 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)

The following key ideas were identified to help inform the plan's vision and guide the approach to network design.

NETWORK VALUE AND SAFETY

Routes and facilities proposed as part of the updated Bike St. John's Master Plan are intended to be safe, relevant, and connected, providing a recognizable and realistic improvement to the city's bike network. The network will provide value to people in St. John's by increasing comfort for those interested in cycling, and increasing safety and convenience of those who are already confident or 'fearless' bike riders. The network must be connected seamlessly, with uninterrupted facilities along clearly identified routes. It's important for routes to connect to major destinations and serve both residents and visitors.

PRIORITIZATION OF BIKE FACILITIES INVESTMENT AND MAINTENANCE

The Cycling Master Plan (2009) identifies 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 STREET 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, to create corridors that are safe, accessible, and comfortable for pedestrians, people cycling, and people with disabilities.

CYCLING PURPOSE

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 who might cycle if they had access to comfortable, convenient and well-connected bicycle routes.

In addition to cycling for transportation/commuting, past reports note resident desire for more routes facilitating recreational cycling, walking, hiking, and even cross-country skiing. By upgrading existing walking trails and building new shared-use paths, investments in the cycling network could serve a wide variety of people participating in active transportation and recreation.

Although it's important to consider cycling purpose, in reality cycling trips are often a mix of transportation and recreation. From a design perspective well-connected, comfortable and convenient routes make cycling attractive to more people.

INTEGRATION WITH TRANSIT

The integration of cycling 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 cycling through the implementation of educational programs and materials.

FIGURE 16 | POPULATION DENSITY IN 2016

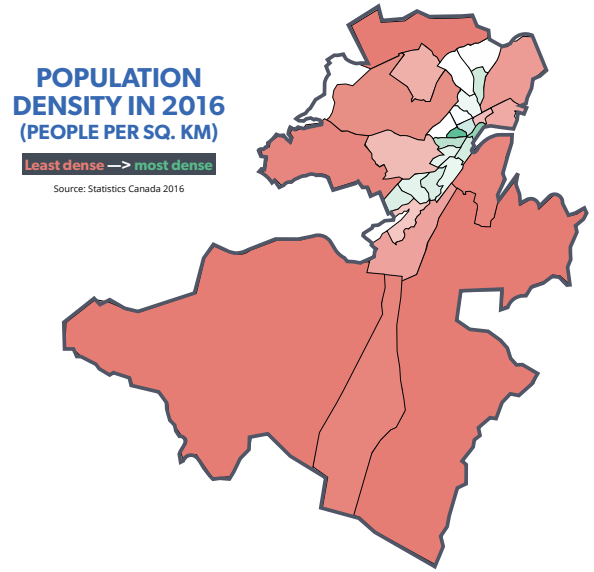
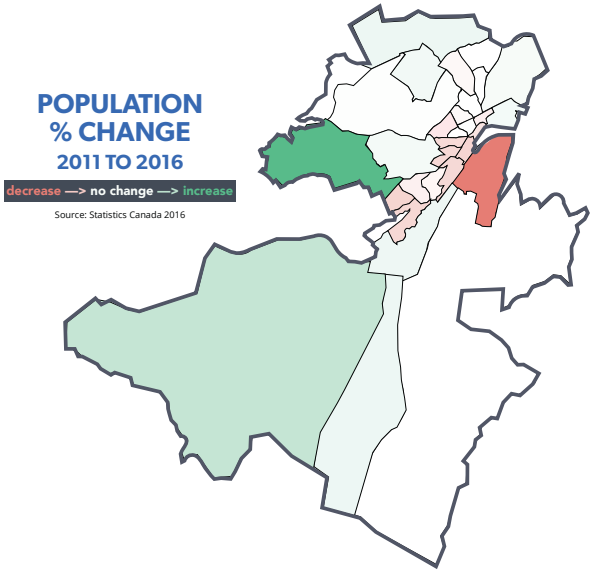


FIGURE 17 | POPULATION % CHANGE 2011 - 2016



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, convenient, and comfortable cycling network they are doing so by car.

To make a meaningful impact on the lives of residents, the bike network ties 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.

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.

FIGURE 18 | MEDIAN TOTAL INCOME

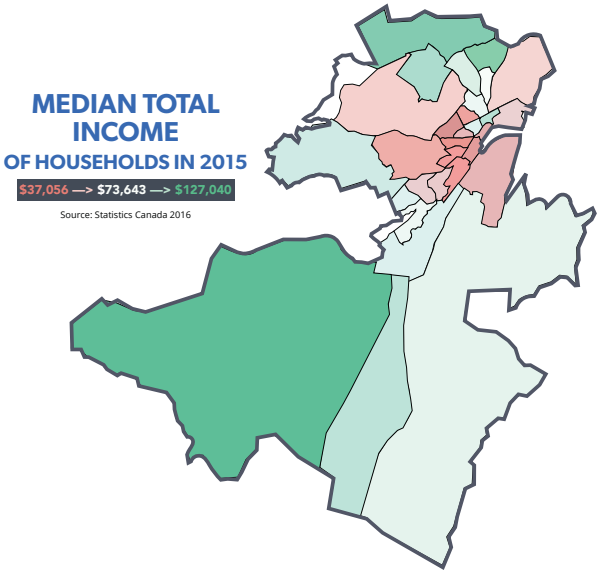
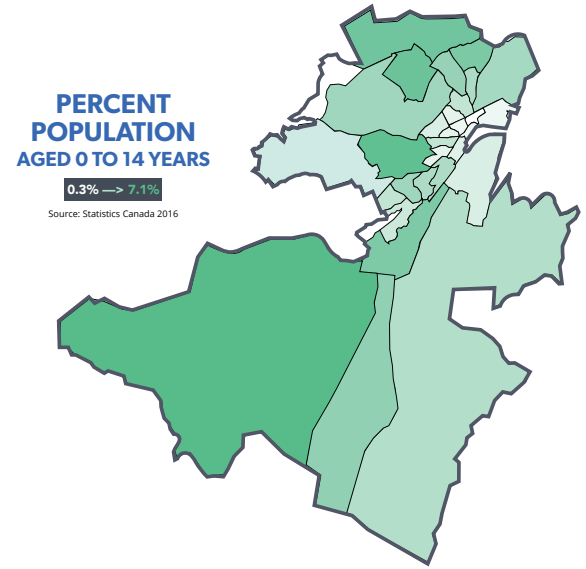


FIGURE 19 | PERCENT POPULATION AGED 0-14 YEARS



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 20.

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 cycling St. John's streets.

Separated from the street, but following the street corridor, the Prince Philip / Columbus Drive shared-use path 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

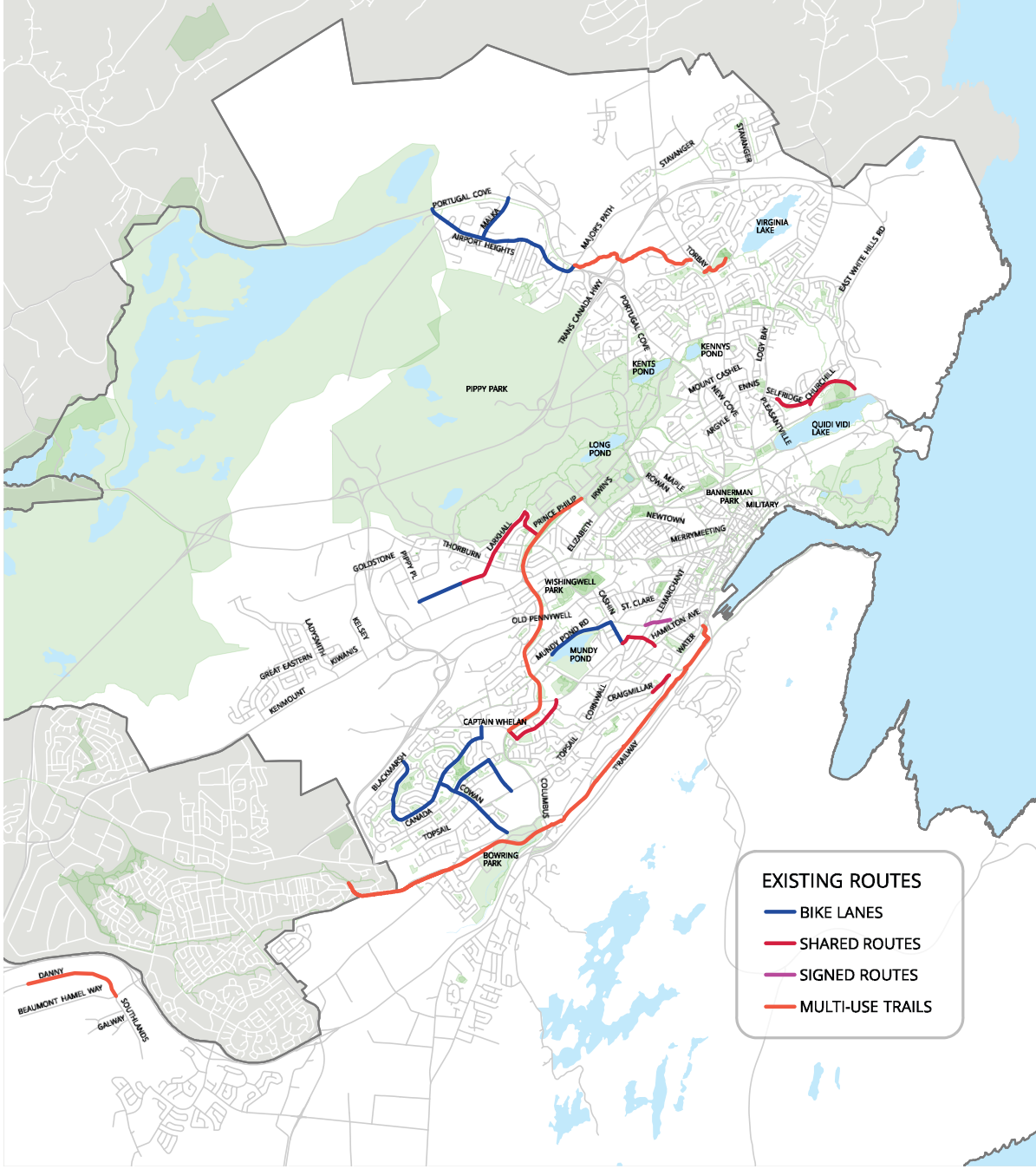


FIGURE 20 | EXISTING BIKE ROUTES

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 is intended to 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 cycling provide 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

Cycling is an activity that any resident may wish to participate in ; therefore, physical and programmatic assets that best support cycling provide network access opportunities within all neighbourhoods.

Engage! St. John's

APPENDIX B | 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 design strives to provide meaningful participation and shared opportunity to access combined recreational and commuter cycling 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 cycling 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 cycling, and explored the material and spatial criteria that may be applied to street and trail routes to achieve ideal comfort and safety.



FIGURE 21 SURVEY #1 RESULTS SUMMARY

» 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.

WHAT DO PEOPLE WANT?

ENGAGEMENT FEEDBACK SUMMARY

Based on what was heard through engagement events, online surveys and the Bike St. John's Advisory Committee, here are the most common themes and ideas used to guide the development of the Master Plan.



FIGURE 22 | ENGAGEMENT FEEDBACK SUMMARY

COMPLETE THIS QUESTIONNAIRE ONLINE:
www.engagestjohns.ca

BIKE ST. JOHN'S MASTER PLAN

Engage! St. John's

public engagement questionnaire

ENDORSED VISION STATEMENT

A new vision for cycling in St John's was developed starting with previous vision statements from the 2009 Cycling Master Plan and the 2017 Bike St. John's Task Force, and with public engagement input from September 2018. It aligns with the City's draft Strategic Plan 2019-2022. This new vision statement was endorsed by the Bike St. John's Advisory Committee at their December 18th meeting. The proposed vision for cycling in St. John's is:

> A safe, inclusive, and convenient cycling network that is well-connected 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.

Does this vision resonate with you? Is anything missing? Please provide any comments or feedback you might have.

DRAFT BIKE NETWORK/ROUTE CHOICES

The focus of the draft network at this stage is a **backbone network** which represents a minimal core network of high quality, safe and comfortable cycling routes across the city. Recognizing that there are limited resources, the backbone network will be an important tool to prioritize projects moving forward.

The backbone network will be supported by **connecting routes** to bring quality cycling infrastructure closer to people and their destinations.

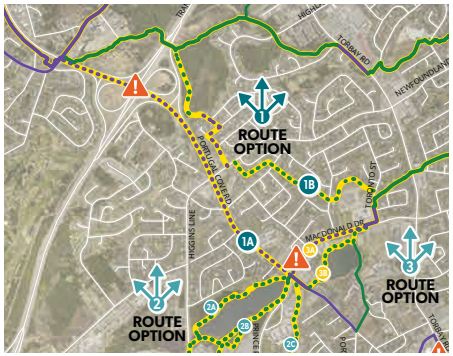
In order to create the backbone and connecting network, there are several areas where public input is needed to determine the best routing options.

ROUTE OPTION 1: AIRPORT HEIGHTS TO MACDONALD DRIVE

Which of the two options being considered to connect Airport Heights and MacDonald Drive do you think would be best?

- ☐ 1A. A new multi-use trail along Portugal Cove Road
- ☐ 1B. Upgraded existing/new multi-use trails through the neighbourhood green spaces in the area
- ☐ No preference

Additional thoughts:

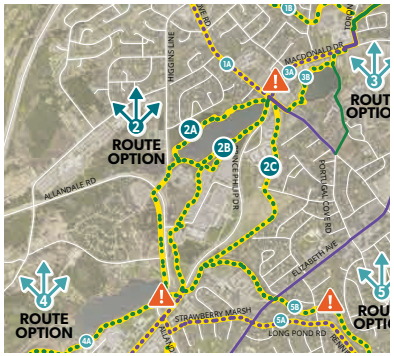


ROUTE OPTION 2: CONFEDERATION BUILDING

Which of the three options being considered between Memorial University and the intersection of Portugal Cove Road and MacDonald Drive do you think would be best?

- ☐ 2A. A new multi-use trail along the west side of Allendale Road connecting to existing Kent's Pond trail
- ☐ 2B. Upgrading the existing multi-use trails west of Allandale Road and improve connections through Confederation Building and Kent's Pond
- ☐ 2C. A new multi-use trail south of Confederation Hill, extending from the existing Rennies River Trail, going through the field, and around College of the North Atlantic to Portugal Cove Road
- ☐ No preference

Additional thoughts:

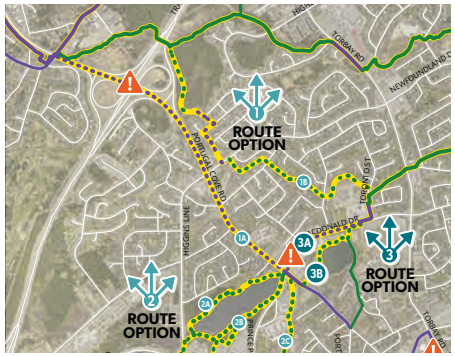


ROUTE OPTION 3: MACDONALD DRIVE AROUND HOLIDAY INN

Which of the two options being considered between Portugal Cove Road and the McDonald Drive Schools do you think would be best?

- [ ] 3A. A multi-use trail along the side of MacDonald Drive
- [ ] 3B. Upgrading the existing trail connection along Kenny's Pond and improve connection from Kenny's Pond to intersection
- [ ] No preference

Additional thoughts:

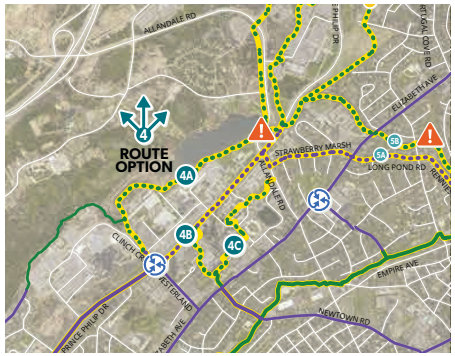


ROUTE OPTION 4: MEMORIAL UNIVERSITY

Which of the three options being considered to connect through the Memorial University campus between Westerland Road/ Clinch Crescent and Allendale Road do you think would be best?

- [ ] 4A. Upgrade the existing multi-use trails along the south side of Long Pond and improve on-road connections on Clinch Crescent
- [ ] 4B. A new extension of the multi-use trail along Prince Philip Drive
- [ ] 4C. A combination of new and upgraded paths through campus
- [ ] No preference

Additional thoughts:

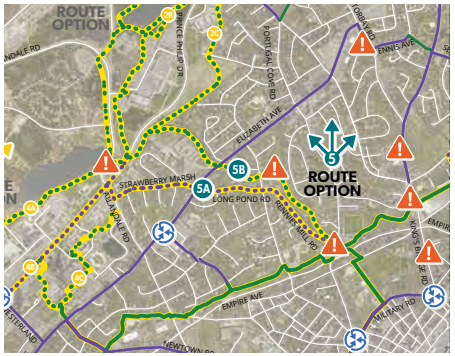


ROUTE OPTION 5: RENNIE'S RIVER AREA

Which of the two options being considered to connect Prince Philip Drive and Empire Avenue do you think would be best?

- [ ] 5A. A new route along Strawberry Marsh Road, Long Pond Road and Rennies Mill Road
- [ ] 5B. Existing Grand Concourse trails along Rennies River, upgraded and converted to multi-use trail
- [ ] No preference

Additional thoughts:

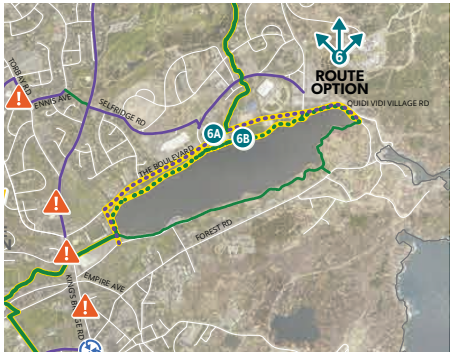


ROUTE OPTION 6: QUIDI VIDI LAKE

Which of the two options being considered along the north side of Quidi Vidi Lake do you think would be best?

- [ ] 6A. A new on-street facility along the Boulevard
- [ ] 6B. Upgrading the existing Quidi Vidi Lake trail to multi-use trail
- [ ] No preference

Additional thoughts:

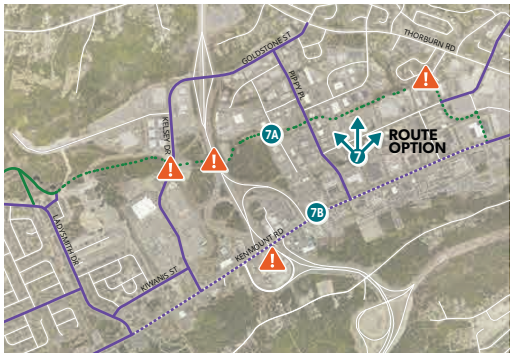


ROUTE OPTION 7: KENMOUNT ROAD AND KELSEY DRIVE AREA

Which of the two options being considered to connect between Kenmount Terrace and the Avalon Mall area do you think would be best?

- [ ] 7A. A new trail along the natural greenbelt running along the rear of parking lots and office buildings in the area
- [ ] 7B. A new multi-use trail along Kenmount Road, offset from the road
- [ ] No preference

Additional thoughts:

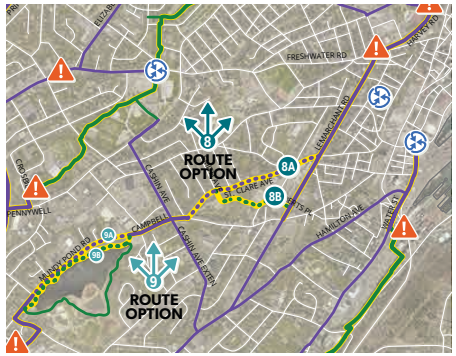


ROUTE OPTION 8: LEMARCHANT ROAD TO MUNDY POND

Which of the two option being considered between LeMarchant Road and Campbell Avenue do you think would be best?

- [ ] 8A. An on-street facility along St Claire Avenue
- [ ] 8B. A multi-use trail through the green space behind Holy Cross Elementary and Junior High Schools
- [ ] No preference

Additional thoughts:

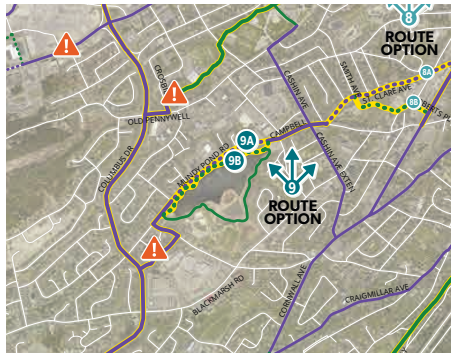


ROUTE OPTION 9: MUNDY POND

Which of the two options being considered between Campbell Avenue and Anthony Avenue in the area of Mundy Pond do you think is best?

- [ ] 9A. An improved on-street facility along Mundy Pond Road
- [ ] 9B. Existing Mundy Pond trail upgraded and converted to multi-use trail
- [ ] No preference

Additional thoughts:

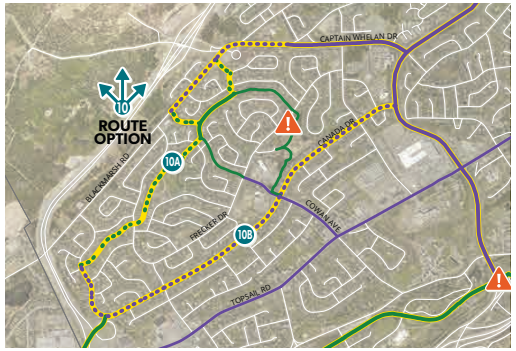


ROUTE OPTION 10: LEMARCHANT ROAD TO MUNDY POND

Which of the two options being considered between Prince Philip Drive connecting through Cowan Heights to an existing multi-use trail that crosses into Mount Pearl Square would be best?

- [ ] 10A. Upgrading existing trails primarily along existing greenbelts to multi-use and an extension of the multi-use trail along Captain Whelan Drive
- [ ] 10B. A new facility along Canada Drive incorporated with future street reconstruction
- [ ] No preference

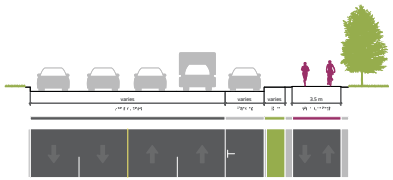
Additional thoughts:



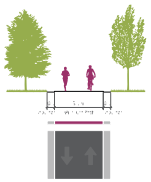
FACILITY TYPE

The draft network also identifies a sample facility type for each route. The type of facility shown (for example, multi-use trail, bike boulevard, protected bike lane) favours modal separation of active transportation users from motor vehicle traffic wherever possible. This was highlighted as important to residents through the Bike St. John's Task Force process and during engagement events in the fall of 2018. It is important to note that the facility type shown at this stage may change as specific routes are investigated in more detail and various challenges are addressed.

Which of the bike facilities shown would you feel comfortable riding on? Please check all that apply.



☐ **MULTI-USE TRAIL**
FOLLOWING A STREET (EXAMPLE)
ALL TRAFFIC SPEEDS, ALL TRAFFIC VOLUMES



☐ **MULTI-USE TRAIL**
FOLLOWING A NATURAL AREA (EXAMPLE)



☐ **TRAFFIC-CALMED BIKE BOULEVARD**
WITH REDUCED SPEED AND VOLUME (EXAMPLE)
LOW TO MEDIUM TRAFFIC SPEEDS, LOW TO MEDIUM TRAFFIC VOLUMES



☐ **OTHER ON-STREET TREATMENTS**

SURFACE MATERIALS FOR MULTI-USE TRAILS

One of the key pieces proposed in the draft network is to upgrade existing trails, converting them to shared-use paths. Trails would be enhanced where needed for the safety and comfort of people walking and riding bicycles in a shared space.

Which surface material do you think is best for shared-use paths? (select one)

☐ Asphalt (paved) surface

☐ Stone (gravel) surface, similar to the existing Grand Concourse Trails

☐ No Preference

Additional thoughts:

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 cycling 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 paths, 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[87], 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.[88][89][90]

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.[91] Prioritized winter cycling facility maintenance and integrated transit hubs complete with protected bike storage are just two examples of strategies to establish a year-round cycling season in St. John's.

87 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

88 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

89 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.

90 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

91 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

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.[92] 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.[93]

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 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).[94]

92City of Hamilton. "Integration with Transit." Date modified 14 August 2018. Accessed 5 March 2019. https://www.hamilton.ca/streets-transportation/biking-cyclists/integration-transit

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

94Sustrans. "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

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).[95] Toronto is an example of one Canadian city that used to do this (bylaw enacted in 1935), but repealed this requirement in 1957.[96]

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.

95Bike Calgary. "Licensing." Bike Calgary. Accessed 5 March 2019. http://bikecalgary.org/licensing/.

96City 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/

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 C | 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, 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

1. Green spaces and neighbourhood parks
2. Grocery Stores
3. Ponds, lakes and rivers
4. Schools

COMMUNITY DESTINATIONS

5. Churchill Square
6. Lester's Farm Market
7. YMCA of Newfoundland and Labrador
8. Paul Reynolds Community Centre

REGIONAL DESTINATIONS

9. Arts and Culture Centre / AC Hunter Adult Public Library
10. Avalon Mall
11. Bannerman Park
12. Bowring Park
13. Confederation Building
14. Downtown
15. Fort Amherst
16. Health Sciences Centre
17. Memorial University of Newfoundland / The Works
18. MUN - Signal Hill Campus / Accommodations

19. Pippy Park / Three Pond Barrens
20. Signal Hill
21. St. Clare's Mercy Hospital
22. St. John's Farmers' Market
23. T'Railway - Trans Canada Trail
24. Village Mall
25. 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

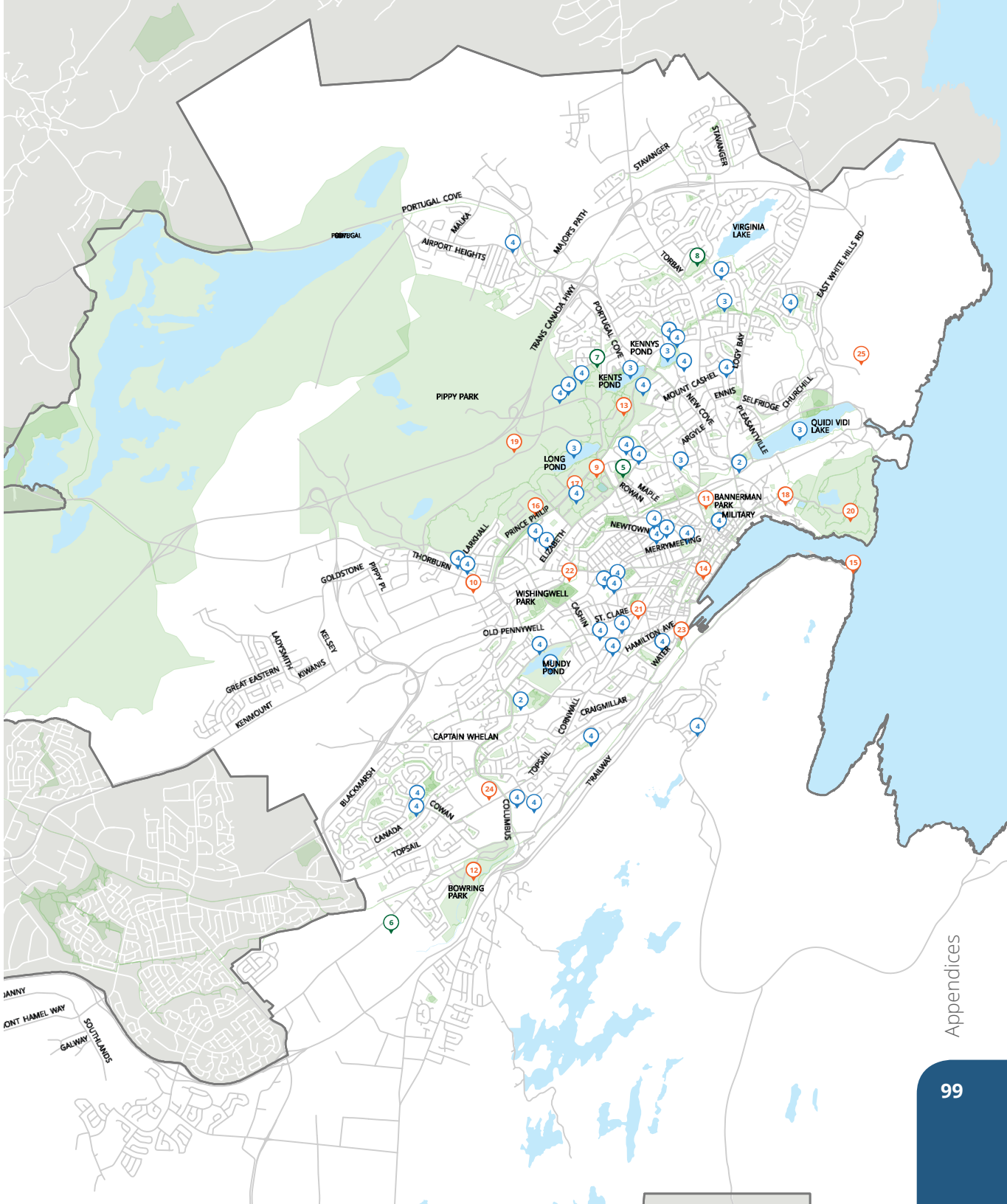


FIGURE 23 ESSENTIAL DESTINATIONS MAP

APPENDIX D | 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. It is important to evaluate these routes for implementation on a case-by-case basis when construction opportunities arise.

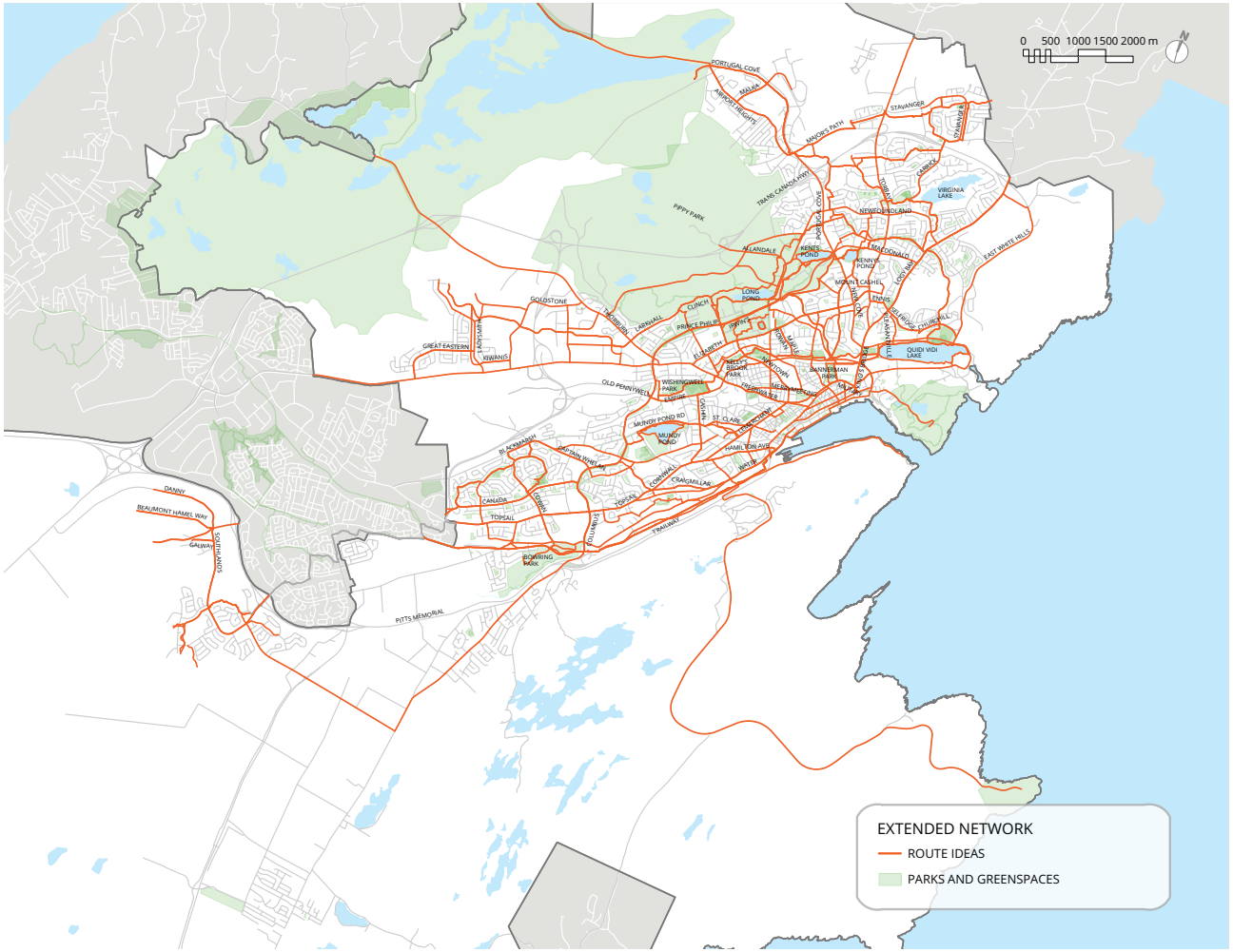


FIGURE 24 BIKE ST. JOHN'S EXTENDED NETWORK

APPENDIX E | 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

1. 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 Transportation Demand Management (TDM) policies.

APPENDIX F | 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:

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 subgrade.

X.06 ROCK CUTS

All rock cuts shall be excavated and mucked out fully to 300mm below subgrade.

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.

X.X MEASUREMENT FOR PAYMENT

X.X PAYMENT

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.

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.

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 Granular A.

Asphalt 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 180mm 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

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

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.

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.

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%.

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.

APPENDIX G | WEBSITE CONTENT

The City of St. John's currently hosts.bikestjohns.ca as a separate website from the city's official website. The Bike St John's website is the central source of information about cycling in the city but is not integrated in the City of St John's website, stjohns.ca.

The following content may be considered when updating the City's cycling website.

Bike Routes & Maps

- Interactive bike network map
- Interactive map showing cycling amenities including bike parking, multimodal hubs, repair stations and local bike shops.
- PDF / printable Bike Network map
- Advertize locations where free printed maps can be found

Building a Bike Network

- PDF of the Bike St John's Master Plan and planned network map
- 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

Cycling Education

- Introduce new traffic features
- Instructional videos, graphics, and/or photos
  - E.g., Metrobus Rack and Ride video[97]
- Maintenance of bike facilities
  - Types of maintenance and departments responsible

Riding Opportunities

- Cycling clubs

FAQs

- Frequently asked Questions and Answers (included in Appendix 9.6)
- Include what to do if …
  - E.g., bike theft, incident

Communications

- Upcoming events calendar
- Notices of route disruption/closure or detours
- Mailing list signup
- Contact information

97 http://www.metrobus.com/bikeracks/xhtml/

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