

# An Active and Sustainable Transportation Strategy for the New **Providence Care** Hospital

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# **EXECUTIVE SUMMARY**

# INTRODUCTION

The purpose of this report is to provide a comprehensive strategy to promote active and sustainable travel (AST) to and from the new Providence Care Hospital in Kingston, Ontario. The report is intended for use by a range of stakeholders and organizations, including Providence Care, the City of Kingston, and Kingston, Frontenac and Lennox & Addington (KFL&A) Public Health. The strategy is targeted towards employees, visitors, and patients of Providence Care Hospital, and focuses on policies, infrastructure, and programming to encourage the use of active and sustainable travel modes. Some of the recommendations in this strategy extend beyond the immediate context of the hospital, and could benefit the wider Kingston community. Similarly, many of the recommendations are transferable to other large employers in Kingston and the surrounding region, including other Providence Care facilities.

The aims of this strategy are:

- To improve existing conditions for AST to and from the Providence Care Hospital site so that these activities are made more safe, enjoyable, and convenient;
- To encourage the use of AST by employees, patients, and visitors to and from Providence Care Hospital; and
- To improve existing conditions for AST in the wider community through the implementation of policies, programming, and infrastructure at the municipal level.

In order to provide an effective AST strategy, the objectives of this report are:

 To identify existing conditions that act as barriers or facilitators to using AST to and from the Providence

- Care Hospital site at the scale of the Kingston Provincial Campus (KPC), as well as the wider community;
- To identify successful AST case studies and best practices implemented in Canada and internationally; and
- To provide recommendations and an implementation strategy to improve conditions for AST to and from the Providence Care Hospital site.

# **BACKGROUND INFORMATION**

# **Defining Active and Sustainable Transportation (AST)**

Active transportation is any form of human-powered transportation, and includes modes as diverse as walking, cycling, using a wheelchair, skateboarding, and even skiing or snowshoeing<sup>1</sup>. Active transportation is normally conceived in terms of using an active mode for the entire journey. However, motorized trips, such as those taken by car, can become more 'active' when people park farther away from their destination and use an active mode for the remainder of the distance. Sustainable transportation is any travel mode that benefits users and the community socially, economically, and/or environmentally; which encompasses active modes. Sometimes active transportation is not feasible for certain trips, however, these trips can often be made in a more sustainable manner than with a private automobile. For this reason, this strategy includes sustainable trips, such as those taken by public transit or by carpooling.

This strategy recognizes that, due to various constraints, AST is not always a convenient or feasible choice for all trips or all individuals. Rather than restricting the use of motor vehicles, this strategy focuses on providing enabling conditions for AST, so that individuals who wish to engage in AST, or have no other option, can do so in an enjoyable and safe manner.

### **Benefits of AST**

Promoting and investing in AST produces benefits in terms of health and social well-being, the natural environment, and economics. Many of these benefits accrue to the general public, and not just to people who participate in AST. For example, engaging in active modes like walking or cycling can be an effective way for people to acquire recommended levels of daily physical activity. This results in health benefits for people who engage in these modes, and produces financial savings for the public by reducing strains on the health care system related to physical inactivity. The initial costs associated with implementing AST-supportive infrastructure and programs are generally outweighed by the comprehensive long-term benefits. As such, Canadian municipalities are increasingly recognizing the value of investing in AST, and almost all new transportation plans contain measures to increase AST<sup>2</sup>.

# **Determinants of AST**

A number of factors, or determinants, influence an individual's choice of transportation mode. The relative influence of these factors varies from individual to individual, and situation to situation. Understanding why people make the travel choices they do is the first step in developing an effective AST strategy. Determinants of travel choice discussed in this strategy fall into two general categories: the built environment and personal characteristics. Components of the built environment that influence behaviour include large-scale development patterns like density, connectivity, and land-use mix, as well as finerscale features like the presence or absence of AST-supportive infrastructure. Personal characteristics discussed in this report include gender, mobility level, knowledge and skills, having a driver's licence, and values and habits. Personal characteristics interact with the built environment to produce the travel choice determinants of convenience and perceived safety.

# **Current Projects and Recent Achievements of AST in Kingston**

A number of organizations in Kingston continue to work towards promoting AST such as Cycle Kingston, VRTUCAR (a car share service), and the Kingston Coalition for Active Transportation (KCAT), an organization that advocates for improved cycling infrastructure and the implementation of walking and biking initiatives. Kingston Transit has implemented various programs to improve ridership, such as increased peak service schedules, school and college bus pass programs, and employee transit programs <sup>3</sup>. The municipal leadership has expressed its desire to encourage AST in such documents as the On-Road Bikeway Implementation Plan and the Active Living Charter <sup>4,5</sup>. To achieve this vision, several measures have been implemented in Kingston in recent years to facilitate AST such as sidewalk improvements and cycling lanes.

# **Sources of Information and Consultation**

Information for this strategy was obtained from a variety of sources. The report was guided by Canadian and international case studies, academic literature, government documents, reports from various organizations, and precedents already implemented in other areas of Kingston. The team conducted 14 interviews with 17 individuals, including City of Kingston staff, community members, planning consultants, provincial employees, and representatives from Providence Care. A workshop was conducted with community stakeholders from the wider Portsmouth Community, and an electronic survey was sent out to all Providence Care employees. Qualitative data was also gathered at the site during a number of visits over the project length.

# **Project Scope**

Although this strategy offers comprehensive recommendations, it was developed to increase the use of AST to and from Providence Care Hospital and is targeted towards AST in the context of transportation, and not recreation. Therefore, the strategy does not address recreational uses on the pathways that will surround the future Providence Care Hospital. Due to the time frame of the project, it was not feasible to conduct detailed audits of the site for walkability, bikability, or safety. Although substantial consideration was given to accessibility for individuals of abilities, this project did not review technical requirements under the Accessibility for Ontarians with Disabilities Act (AODA). Finally, costs were not calculated for the recommendations proposed in this report. However, recommendations were chosen with consideration given to feasibility of implementation and the potential for impact.

# STRATEGY CONTEXT

# **Providence Care**

Providence Care is a provincial health care provider that operates three facilities within the City of Kingston: St. Mary's of the Lake Hospital, Mental Health Services (MHS), and Providence Manor. Providence Care employs approximately 1,700 people and provides a variety of health care services, including continuing care, mental health services, and physical rehabilitation. In May 2014 construction began on a new hospital facility, known as Providence Care Hospital, which will consolidate services currently offered by St. Mary's of the Lake Hospital and Mental Health Services. Travel to and from this future facility, located south of King Street West at Portsmouth Avenue (see **Figure 1**), is the focus of this strategy.

The redevelopment of Providence Care's facilities is occurring at the same time that planning is underway for the redevelopment of the Kingston Provincial Campus (KPC), a 49 hectare site on which Providence Care Hospital will be located (see **Figure 1**). A Master Plan and Block Plan, both of which are comprehensive long range plans, have been produced to guide future development of the campus and accommodate the needs of Providence Care Hospital. These plans indicate that medium and high density residential development is planned for new blocks on the campus, further demonstrating the timeliness of developing and implementing an AST strategy.



**Figure 1:** The Kingston Provincial Campus (shaded with red) where Mental Health Services will be replaced by the new Providence Care Hospital (Adapted from Google Maps, 2014).

# **Current Access to Providence Care Mental Health Services**

Mental Health Services and the site of the future Providence Care Hospital can be accessed by a number of transportation modes.

# Motorists (see Figure 2):

- Site is accessed from King Street at Portsmouth Avenue;
- Parking is provided free of charge at MHS and elsewhere on the campus;
- Traffic congestion is common on King Street near the KPC during peak hours;
- Congestion occurs throughout the day at the intersection of King Street, Union Street, and Mowat Avenue, immediately east of the campus.



Figure 2: Illustration of current motorist access to MHS (Adapted from City of Kingston, 2013).

# Pedestrians (see Figure 3):

- Can access site via newly replaced sidewalk from King Street at Portsmouth Avenue and a path which terminates near King Street and McDonald Avenue;
- An informal pathway at King Street and Mowat Avenue connects the KPC to an adjacent restaurant;
- The Waterfront Trail, which crosses the south end of the KPC, is an indirect route for most residents;
- Lighting around the Waterfront Trail is limited at night;
- Lighting is adequate around MHS building, but findings suggest the isolated location causes some employees to feel unsafe walking to or from their vehicle at night.



**Figure 3:** Illustration of current pedestrian access to MHS (Adapted from City of Kingston, 2013).

# Cyclists (see Figure 4):

- Can access site with vehicles from King Street and, less directly, with pedestrians from the Waterfront Trail;
- Findings indicate that, due to traffic congestion, limited presence of cycling lanes, and intersections without designated cycling infrastructure, cyclists feel unsafe navigating the portion of King Street near the KPC;
- One outdoor rack is provided for bicycle storage at MHS, though many employees feel the location is not secure and choose to store their bicycles informally within the building.



Figure 4: Illustration of current cyclist access to MHS (Adapted from City of Kingston, 2013).

# Transit Riders (see Figure 5):

- No transit route enters the KPC. The closest bus stop to MHS is located on the southwest corner of King Street and Portsmouth Avenue;
- Five standard transit routes provide service on King Street every 15-30 minutes during the daytime, Monday to Saturday, and offer connection to the St. Lawrence College transfer point;
- · One express route also serves King Street;
- · Service is at reduced frequency for evenings and Sundays;
- There is no service from 11:30 PM to 6:15 AM, which poses a challenge for some shift workers.



Figure 5: Illustration of current transit access to MHS (Adapted from City of Kingston, 2013).

# **Policy Context**

This report contains an overview of relevant provincial and municipal policies. These policies informed the direction of the strategy, outlined support for current and future AST projects, and identified opportunities for improvement.

# **BEST PRACTICE CASE STUDIES**

In order to create an effective AST strategy, a case study analysis was conducted by the team prior to developing recommendations. A total of 11 case studies were reviewed, of which six are Canadian and five are international. The analysis included case studies and best practices focused on policy, programming, and infrastructure modifications. Each case study focuses on at least one mode of travel - walking, cycling, transit, and/or carpooling - but does not necessarily provide best practices for all modes discussed in this AST strategy. A summary of the findings of the case study research is shown on the following page, in **Table 1**.

# PRIMARY RESEARCH FINDINGS

# **Spatial Analysis**

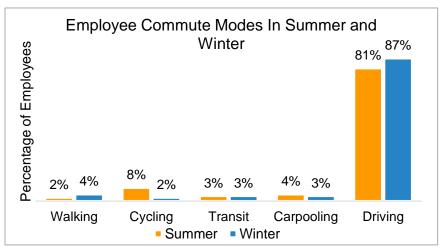
A spatial analysis of the geographic distribution of Providence Care employees was completed by plotting employee postal codes which were provided by Providence Care. This spatial analysis was able to illustrate the percentage of employees who live within a reasonable walking and cycling distance from Providence Care Hospital. According to Larsen *et al.* (2010), individuals who walk to work generally travel two km or less, whereas individuals who cycle may travel up to five km. These measurements were used to create the buffers for the spatial analysis. The findings from this analysis concluded that 76% of employees live further than five km from the hospital, 22% between two and five km, and 4% of employees live within two

km. Although people may choose to walk to cycle farther than these distances, the results indicates that active transportation, at least for the full length of the work commute, is not feasible for many employees due to trip distance.

# Survey

A 21-question survey was distributed to all Providence Care employees to gather information about their commuting patterns. Over a 25-day period, 264 people completed the survey, giving a response rate of approximately 16%. The survey covered a number of topics, including the personal characteristics of respondents, commuting patterns, willingness to try new modes, and factors that would make walking, cycling, and taking transit more attractive commuting options.

The majority of survey respondents drive to work, both in the summer months (81%) and winter months (87%) (see **Figure 6**). Winter conditions cause commuting patterns to shift, when more employees choose to drive and fewer elect to cycle. This suggests that winter conditions in Kingston are less conducive to cycling than other modes, a finding that was supported by our interviews and workshop.



**Figure 6:** Comparison of Providence Care employee commute modes in the summer and winter months.

**Table 1:** A summary of the key points from each of the case studies analyzed.

Case Study	Key Points
Manitoba Hydro	<ul> <li>Employee relocation creates an ideal opportunity to change employee commuting habits.</li> <li>Flexible work schedules make it possible for employees to use alternate modes of transportation.</li> </ul>
International Institute for Sustainable Development	<ul> <li>Emergency ride home programs, like taxi vouchers, provide employees with the peace of mind to choose AST.</li> <li>Subsidized transit passes provide an incentive for employees to switch from driving.</li> </ul>
Mount Royal University	<ul> <li>Providing resources like informative websites and bike repair kits makes using AST more convenient.</li> <li>Providing designated parking spots and a guaranteed ride home in case of emergency makes carpooling an attractive choice of travel.</li> </ul>
Active Transportation Network	Comprehensive and thoughtfully designed active transportation networks connect employees to their workplaces, making active commuting more likely to occur, as well as safer and more enjoyable for users.
Short Street Project	<ul> <li>Reduced parking space availability provides an incentive for people to travel by other modes, and sharing parking with other users reduces the need for large parking lots.</li> </ul>
City of Richmond	<ul> <li>Providing education and extensive easily accessible information to both pedestrians and motorists promotes safety and use of walking as an alternative to driving.</li> <li>Investing in crosswalk infrastructure such as overhead lighting and audible crosswalk signals makes the perception of walking safer thereby encouraging more people to use this form of AST.</li> </ul>
Texas Instruments	Employer car-pooling programs can benefit from making use of regional ride-matching services.
Pacific Northwest National Laboratory	<ul> <li>Online resources for employees can provide information on the benefits of alternative transportation modes, connect carpool participants, and raise awareness about special events and programs.</li> <li>Employee commuting is an area that employers can demonstrate corporate responsibility by facilitating the reduction of greenhouse gas emissions.</li> </ul>
ВР	<ul> <li>Ease of access to transit can be improved with the strategic location of bus routes and stops and a free shuttle service to nearby transfer locations.</li> <li>On-site infrastructure such as paths, changing areas, and showers can encourage more employees to choose cycling.</li> </ul>
ST Microelectronics	<ul> <li>Shuttle service between employer location and transit service provides incentive for employees to use AST.</li> <li>End-of-trip facilities like sheltered and secure bike storage, change rooms, and showers can make cycling a more attractive commuting option.</li> </ul>
Lake Region Healthcare	Sheltered bicycle racks in convenient locations make cycling to work and bicycle maintenance easier.

When respondents were asked if there were incentives that would encourage them to try new modes, the following factors were the top three most popular responses by mode:

# Walking

- 1. Better snow clearance in the winter months
- 2. A free, guaranteed ride home in case of emergency
- 3. Safer and/or more road crossings

# Cycling

- 1. Improved cycling lanes and pathways
- 2. Secure and sheltered bicycle parking at work
- 3. Better snow clearance in the winter months

# **Taking Transit**

- 1. Direct transit route to and from my workplace
- 2. Bus stop very close to main work entrance
- 3. A free, guaranteed ride home in case of emergency

# Workshop

A workshop was held in Portsmouth Village with 14 community members. The purpose of this workshop was to record community perspectives on AST within the area surrounding Providence Care Hospital.

Workshop participants identified existing barriers to AST such as unsafe intersections and high traffic speeds and volumes on King Street, insufficient lighting around MHS, inadequate bike storage at MHS, and the long distance between King Street transit stops and the MHS entrance. Facilitators identified by the participants included the scenic Waterfront Trail, the potential for commercial land uses on KPC, and the personal health benefits of AST. Participants also engaged in facilitated discussions regarding best practices for cycling, walking, and public transit. These discussions informed the selection and prioritization of recommendations for the strategy.

### Interviews

A total of 14 interviews were conducted with 17 participants that included planning professionals from the City of Kingston and Infrastructure Ontario, a planning consultant for the KPC, representatives of patients and staff at Providence Care, representatives from the Portsmouth District Community Association, and the Kingston Seniors Association. Interview findings provided valuable insight into Kingston AST initiatives, as well as barriers and facilitators for taking AST to the hospital site and in the surrounding area.

# **Key Challenges**

Encouraging the use of AST to Providence Care Hospital involves three key challenges that were identified through our research. These issues require attention and careful thought as they represent crucial factors for the success of the strategy. The three challenges, which will be discussed in detail, are:

- 1. **Distance from hospital entrance to transit service**. The pathway that will connect the hospital to the nearest transit stop is 740 m long. This distance is inconvenient, especially for those facing mobility challenges.
- Implications of introducing paid parking. The future paid parking system at the hospital presents an opportunity to promote AST. However, Providence Care needs to consider surrounding land uses and fair pricing when planning this system.
- 3. Required intersection improvements along King Street. King Street is the main commuter route for people to access the KPC. Three intersections along King Street have been identified as hazardous for pedestrians and cyclists: Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue.

# **RECOMMENDATIONS**

Based on the primary findings gathered throughout this process, various recommendations were developed for the different modes AST. These recommendations may be policy-oriented, or take the form of new and improved programming or infrastructure. Furthermore, these recommendations vary with respect to the key stakeholder(s) required for their implementation.



### **Providence Care**

- **G-1:** Establish flexible work hours, as job duties allow, so employees can adjust their start and finish times to suit transportation needs
- **G-2:** Create a comprehensive AST webpage to provide information regarding AST options and services at PCH
- **G-3:** Implement financial awards and incentives for employees who choose AST modes
- **G-4:** Offer a free, guaranteed ride home program for employees who use AST, in case of emergency
- **G-5:** Establish an institution-wide sustainability policy, in which one priority objective is to encourage the use of AST

# **City of Kingston**

**G-6:** Create an easily-accessible and comprehensive webpage related to AST for use by residents and visitors

### Collaborative

- **G-7:** Improve way-finding on a municipal scale for pedestrians, cyclists, and motorists; allowing for adoption on non-municipal land such as KPC
- **G-8:** Maintain AST infrastructure to a high standard, including snow and debris removal and timely repairs
- **G-9:** Create a Transportation Management Association to promote AST



# Walking Recommendations

### **Providence Care**

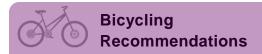
W-1: Create an AST Committee to promote walking

# **City of Kingston**

- **W-2:** Prioritize sidewalk clearance near healthcare facilities to minimize snow and ice as barriers to AST participation
- **W-3:** Widen sidewalks around KPC to improve safety and comfort of pedestrians
- W-4: Improve and provide more signalized pedestrian crossings along King Street
- **W-5:** Provide more courtesy crossings near the KPC on streets with slower moving traffic

# Collaborative

- **W-6:** Improve quality of walking paths on KPC and surrounding area to create consistent and connected paths
- **W-7:** Implement heated sidewalks to eliminate snow and ice buildup in key areas such as the PCH main entrance and pathway connecting to transit



### **Providence Care**

- **B-1:** Establish comprehensive end-of-trip facilities such as short- and long-term parking; showers, change rooms, lockers, and bathrooms; and bicycle maintenance facilities
- **B-2:** Create a bike-to-work club and host awareness activities to provide information to employees about the benefits of cycling
- **B-3:** Implement a bike share program to allow employees to utilize bikes for short trips and to participate in cycling activities and events, without requiring ownership of a bike

# **City of Kingston**

- **B-4:** Implement bike boxes on Portsmouth Avenue at King Street and Johnson Street to make navigating these intersections safer for cyclists
- **B-5:** Increase bike lane presence and improve connectivity of King Street cycling infrastructure
- **B-6:** Paint sharrows on roads where implementing bike lanes is not feasible or necessary
- **B-7:** Introduce traffic calming measures on local streets and along Front Road to ensure posted speed limits are adhered to, making cyclists more comfortable and safe



# Transit Recommendations

### **Providence Care**

**T-1:** Provide Kingston Transit's Employer Transpass Program to allow employees to purchase and renew Kingston transit passes at a discounted rate

# **City of Kingston**

- **T-2:** Upgrade existing bus stops and shelters to improve accessibility and comfort
- **T-3:** Install user-activated heating systems at priority bus shelters to increase comfort for people waiting for the bus
- **T-4:** Install infrastructure and technology to reduce transit delays and trip time
- T-5: Enhance and promote Park and Ride facilities

### Collaborative

- **T-6:** Provide real-time transit information to enable users to accurately plan their transit trips and minimize time spent outdoors in inclement weather
- **T-7:** Promote Kingston's Rack and Roll program with instruction in workplace AST seminars
- **T-8:** Develop well-connected transit linkages for pedestrians and cyclists to allow people to access transit stops without compromising their safety



### **Providence Care**

**C-1:** Charge a reduced fee for carpool parking spots as an incentive to carpool

**C-2:** Provide dedicated parking spaces for carpooling employees

# Collaborative

**C-3:** Implement a workplace and/or regional carpooling program to facilitate finding a compatible commuting party



# Challenge 1: Distance from hospital entrance to transit service

# Offer a shuttle from the hospital to King Street

 Providence Care should investigate providing a shuttle service to nearby transit stop locations along King Street and/or at SLC during peak hours

# Enhance the walking route from hospital entrance to King Street

Providence Care should collaborate with Infrastructure Ontario to make the following improvements to the walking route:

- Provide a more direct pedestrian route to King Street
- Apply general and walking recommendations made in this strategy to improve the planned pathway
- Install heated sidewalks on the route, with priority being near the hospital entrance

• Improve user experience with interpretive signs

# Improve the experience of waiting for transit

- Provide real-time transit information
- Install a passenger activated heating system in the bus shelter at King Street and Portsmouth Avenue

# Challenge 2: The implications of introducing paid parking

Providence Care should:

- Provide a flexible parking pass to encourage staff to use AST modes while still having the flexibility to drive when necessary
- Lease excess parking spaces to nearby institutions, if increased AST usage results in unused spaces
- Set employee parking rates to no less than \$83/month, given market rates and the cost of Transpass
- Consider a lower than average (\$9/day) price for patients and visitors, consistent with patient-centred healthcare
- Lease spaces to long-term visitors at a rate lower than employees

To address potential for PCH employees to find free or lessexpensive parking nearby, stakeholders should consider the following:

- The City of Kingston should implement a permit system for nearby residential streets and a pay-by-plate system at Lake Ontario Park, to maintain free access for park users while being able to enforce paid parking for others
- St. Lawrence College should increase their monthly parking rate to be more comparable to other institutions
- The Ontario ministry offices should proactively implement permit parking for their employees

# Challenge 3: Required intersection improvements along King Street

Key intersections identified for improvement along King Street include Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue. Recommendations were drawn from the Ontario Traffic Manual to demonstrate improvements which align with the Ontario Ministry of Transportation design guidelines. Detailed recommendations and intersection diagrams are presented in the body of the report.

### **IMPLEMENTATION**

Implementation of this AST strategy will have to be done with consideration of surrounding land uses and relevant stakeholders; therefore, partnerships must be established to improve AST commuting options beyond just the site of the hospital itself. Collaboration between Providence Care, IO, and the several departments within the City of Kingston is necessary. As well, connecting with community stakeholders is critical for gathering widespread support and also means that changes will benefit as many people as possible.

# **Strategy Implementation Timeline**

Tables in Chapter 11 provide a brief overview of all the recommendations presented in this report which are grouped into one of three categories with respect to the timeframe. The three categories are as follows:

**Quick Win Recommendations**: Recommendations which can be easily implemented in a timely manner and provide an almost immediate benefit at a low financial cost.

**Short-term Recommendations**: Recommendations to be implemented within the next five years.

**Long-term Recommendations**: Recommendations which may take over five years to be fully implemented.

# **DISCUSSION AND CONCLUSION**

The goal of this active and sustainable transportation (AST) strategy is to improve conditions for using AST both to and from the new Providence Care Hospital and in the wider community. as well as to encourage employees, patients, and visitors of the new hospital to choose active and sustainable commuting modes. Research was conducted through policy and document analyses, academic research, case study analyses, interviews with planning professionals and community members, and through a community workshop. Three key challenges, or major themes, for creating and implementing a successful AST included key intersection improvements, a strategy comprehensive parking strategy by Providence Care, and the distance from the hospital front doors to the nearby transit stops. Recommendations encompass changes to policies, programs, and infrastructure and are targeted towards Providence Care, the City of Kingston, or multiple stakeholders. There are several recommendations that can be implemented quickly with minimal while other relatively cost: recommendations will require intensive planning and partnerships between stakeholders.

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<sup>4</sup> City of Kingston. (2009). Report to Environment, Infrastructure & Transportation Policies Committee: On-road bikeway implementation plan. Retrieved November 3, 2014 from http://archive.cityofkingston.ca/pdf/transportation/Cycling\_On-RoadBikewayImplementationPlan.pdf

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# **ABOUT THE TEAM**

**Holli** has completed two undergraduate degrees, including a Bachelor of Arts in Geography from Thompson Rivers University and a Bachelor of Science in Geomatics from the University of Gävle (in Sweden). At Queen's University, her focus is on Health and Social Planning and her research interests include affordable housing and the links between urban planning and public health.

**Kate** completed her undergraduate degree in Geological Engineering at Queen's University. She is concentrating on Land Use Planning and has keen interests in sustainable development in commercial real estate and in environmental urban design.

**Diane** received her Bachelor of Science with Honours in Environmental Science from the University of Calgary. She worked as an Environmental Planner before starting her Master's degree at Queen's University in urban planning. Her research focuses on community development for marginalized populations and her other interests include affordable housing, housing policy, and multicultural planning.

**Randi** completed her Bachelor of Science in Environmental and Conservation Sciences, with specialization in Conservation Biology, at the University of Alberta. Her thesis focuses on relations between municipalities and First Nations communities, and her interests include regional planning, rural issues, and healthy community planning.

**Cian** has an undergraduate degree in Civil Engineering and is an M.PL. candidate in Health and Social Planning. He has walked, cycled, and rode transit in Kingston for almost seven years and has firsthand experience with AST best practices in Denmark, The Netherlands, Germany, and France. Cian's research focuses on sustainable transportation, affordable housing, and local food systems.

**Jenna** received her Bachelor of Science with Honours in Environmental Biology from Queen's University. Following this, she started her Master's degree in urban planning at Queen's University. Her focus at Queen's is on Health and Social Planning and her research interests include healthy community planning and age-friendly community development.



From left to right: Kate, Jenna, Holli, Cian, Randi, Diane, and Dr. Patricia Collins.

ACKNOWLEDGEMENTS
EXECUTIVE SUMMARY III
INTRODUCTIONIII
BACKGROUND INFORMATIONIII
STRATEGY CONTEXTV
BEST PRACTICE CASE STUDIES
PRIMARY RESEARCH FINDINGS
RECOMMENDATIONSXI
IMPLEMENTATION XIV
DISCUSSION AND CONCLUSIONXIV
ABOUT THE TEAMXVI
INTRODUCTION1
1.1 PROJECT BACKGROUND1
1.2 Sources of Information and Consultation2
1.3 What is Active and Sustainable Transportation (AST)?3
1.4 WHY ACTIVE AND SUSTAINABLE TRANSPORTATION?3
1.5 PROJECT SCOPE4
1.6 REPORT OVERVIEW4
BACKGROUND9
2.1 BENEFITS OF AST9
2.2 Costs of AST11
2.3 DETERMINANTS OF ACTIVE AND SUSTAINABLE TRANSPORTATION 12
2.4 SITE CONTEXT15
2.5 POLICY CONTEXT22

BEST PRACTICE CASE STUDIES33
O.4 Managera Harris and Managera Managera
3.1 MANITOBA HYDRO – WINNIPEG, MANITOBA34
3.2 INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT (IISD) – WINNIPEG, MANITOBA
3.3 MOUNT ROYAL UNIVERSITY – CALGARY, ALBERTA
3.4 ACTIVE TRANSPORTATION NETWORK (ATN) – KELOWNA, BRITISH COLUMBIA
3.5 SHORT STREET PROJECT – DISTRICT OF SAANICH, BRITISH COLUMBIA
3.6 CITY OF RICHMOND – RICHMOND, BRITISH COLUMBIA
3.7 TEXAS INSTRUMENTS - DALLAS, TEXAS, USA40
3.8 PACIFIC NORTHWEST NATIONAL LABORATORY - RICHLAND, WASHINGTON, USA
3.9 Lake Region Healthcare - Fergus Falls, Minnesota, USA 42
3.10 BP - SUNBURY ON THAMES, UK
3.11 ST MICROELECTRONICS - GRENOBLE, FRANCE 44
3.12 CASE STUDY SUMMARY TABLE
PRIMARY RESEARCH FINDINGS49
4.1 SPATIAL ANALYSIS
4.2 PROVIDENCE CARE EMPLOYEE COMMUTING SURVEY51
4.3 WORKSHOP
4.4 INTERVIEWS
4.5 KEY CHALLENGES FOR THE STRATEGY 59
4.6 REVIEW OF PRIMARY RESEARCH FINDINGS



GENERAL RECOMMENDATIONS67
5.1 GENERAL RECOMMENDATIONS FOR PROVIDENCE CARE67
<b>5.2 GENERAL RECOMMENDATIONS FOR THE CITY OF KINGSTON69</b>
5.3 COLLABORATIVE GENERAL RECOMMENDATIONS69
WALKING RECOMMENDATIONS73
6.1 WALKING RECOMMENDATIONS FOR PROVIDENCE CARE73
6.2 WALKING RECOMMENDATIONS FOR THE CITY OF KINGSTON 73
6.3 COLLABORATIVE WALKING RECOMMENDATIONS76
CYCLING RECOMMENDATIONS79
7.1 CYCLING RECOMMENDATIONS FOR PROVIDENCE CARE79
7.2 CYCLING RECOMMENDATIONS FOR THE CITY OF KINGSTON 82
TRANSIT RECOMMENDATIONS
8.1 Transit Recommendations for Providence Care87
8.2 Transit Recommendations for the City of Kingston 88
8.3 COLLABORATIVE TRANSIT RECOMMENDATIONS91
CARROOL RECOMMENDATIONS
CARPOOL RECOMMENDATIONS95
9.1 CARPOOLING RECOMMENDATIONS FOR PROVIDENCE CARE 95
9.2 COLLABORATIVE CARPOOLING RECOMMENDATIONS96
STRATEGIES TO ADDRESS KEY CHALLENGES99
10.1 REVIEW OF KEY CHALLENGES100

10.2 STRATEGIES TO ADDRESS THE DISTANCE FROM HOSPITAL	
ENTRANCE TO TRANSIT SERVICE	100
10.3 A COMPREHENSIVE PARKING STRATEGY	103
10.4 STRATEGIES TO IMPROVE INFRASTRUCTURE AT KEY	
Intersections	108
STRATEGY IMPLEMENTATION	<u>115</u>
11.1. TIMELINE FOR STRATEGY IMPLEMENTATION	115
11.2. STAKEHOLDERS	120
11.3. FINAL COMMENTS AND CONCLUSION	120

# 1 INTRODUCTION

1.1 PROJECT BACKGROUND	1
1.2 Sources of Information and Consultation	2
1.3 What is Active and Sustainable Transportation (AST)?	23
1.4 WHY ACTIVE AND SUSTAINABLE TRANSPORTATION?	3
1.5 PROJECT SCOPE	4
1.6 REPORT OVERVIEW	4

# 1.1 PROJECT BACKGROUND

The purpose of this report is to provide a comprehensive strategy to promote active and sustainable travel (AST) to and from the redeveloped Providence Care Hospital in Kingston, Ontario. This report was produced for use by a range of stakeholders and organizations, including Providence Care, the City of Kingston, and our project client, Kingston, Frontenac and Lennox & Addington (KFL&A) Public Health. The strategy is targeted towards employees, visitors, and patients of Providence Care Hospital, and focuses on strategies to get people travelling in active and sustainable ways. Some of the recommendations in this strategy extend beyond the immediate context of the hospital, and could benefit the wider Kingston community. Similarly, many of the recommendations are relevant to other large employers in Kingston and the surrounding region, including other Providence Care facilities.

Providence Care is a large institution that employs approximately 1,700 employees and provides aging, mental health, and physical rehabilitative care through multiple facilities located in Kingston and the surrounding region. There are three main Providence Care facilities in Kingston: Mental Health Services, St. Mary's of the Lake Hospital, and Providence Manor (see Figure 1.1). Two of these facilities - Mental Health Services and St. Mary's of the Lake Hospital - are consolidating into a new facility, Providence Care Hospital which will open in 2016 or 2017. This building will be located at 752 King Street West, slightly south of where the Mental Health Services building currently sits (see Figure 1.2). This location is part of the Kingston Provincial Campus (KPC) and is embedded within a larger community context, including Portsmouth Village, Lake Ontario Park, and St. Lawrence College. The KPC also holds other buildings, including the Beechgrove Complex and Ministry

# 1 - INTRODUCTION

of Ontario Offices. Intensive, mixed use development is planned for the KPC in the future. All of these contextual elements were considered in the formation of this strategy, and demonstrate the timeliness of this strategy and report.

# **Target Groups**

This strategy was designed with the needs of three unique groups of people in mind: hospital employees, patients, and visitors. Each group has different characteristics and requirements when travelling to and from Providence Care Hospital. For staff, recommendations must consider shift hours and daily commutes, as well as travel between different Providence Care facilities and community locations. Some patients, specifically those in physical rehabilitation, may experience mobility challenges and need to make frequent trips to the facility. Lastly, this strategy needs to consider the needs of visitors, who may be the least familiar with travel to the hospital, particularly with regard to using AST.

# The aims of this strategy are:

- To improve existing conditions for AST to and from the Providence Care Hospital site so that these activities are made more safe, enjoyable, and convenient
- To encourage the use of AST by employees, patients, and visitors to and from Providence Care Hospital
- To improve existing conditions for AST in the wider community through the implementation of policies, programming, and infrastructure at the municipal level

# The objectives of this report are:

- To identify existing conditions that act as barriers or facilitators to using AST to and from the Providence Care Hospital site at the scale of the KPC as well as the wider community
- To identify successful AST case studies and best practices implemented in Canada and internationally
- To provide recommendations and an implementation strategy to improve conditions for AST to and from the Providence Care Hospital site

A set of principles, as shown in **Table 1.1**, provided a framework to guide the research and recommendations for this study. These principles were drawn from similar strategies and were verified as key components of an AST strategy in a community workshop conducted by our team. Referring to these principles was useful for our team when proposing and evaluating various recommendations.

# 1.2 Sources of Information and Consultation

Information for this strategy was obtained from a variety of sources. The final report was guided by Canadian and international case studies, academic literature, government documents, reports from various organizations, and precedents already implemented in other areas of Kingston. The team conducted interviews with City of Kingston staff, community members, planning consultants, provincial employees, and representatives from Providence Care. One workshop was conducted with community stakeholders from the wider Portsmouth Community, and an electronic survey was sent out to all Providence Care employees. Additionally, the team visited the site a number of times, and travelled to it by walking, cycling, taking public transit, and driving.

Table 1.1 Guiding Principles of Providence Care Hospital AST Strategy

PRINCIPLE	DESCRIPTION
Convenience and Accessibility	Time, access, and ease of use are important components of transportation.
Equity	Transportation should be accessible and inclusive for all members of the community, regardless of socioeconomic status or ability.
Safety	People need to feel and be secure from injury and crime when using AST.
Environmental Health and Sustainability	Environmental sustainability and the protection of natural spaces is a desirable public good.
Physical and Mental Health	Improved individual and public health and wellbeing are desirable objectives.
Economic Savings	Short- and long-term costs and benefits cannot be ignored, and they need to be considered in a comprehensive way.
Education and Awareness	Change is supported by cultural shifts in awareness and values.

# 1.3 What is Active and Sustainable Transportation (AST)?

Active transportation is any form of human-powered transportation, and includes modes as diverse as walking, cycling, using a wheelchair, skateboarding, and even skiing or snowshoeing<sup>1</sup>. Active transportation is normally conceived in terms of using an active mode for the entire journey. However, motorized trips, such as those taken by car, can become more 'active' when people park farther away from their destination and use an active mode for the remaining distance. Active transportation is a type of sustainable transportation, which is any travel mode that benefits users and the community socially, economically, and/or environmentally. Sometimes active transportation is not feasible for certain trips, but that does not mean that these trips cannot become more sustainable. For this reason, this strategy also includes sustainable trips, meaning trips taken by public transit or carpooling. This being said, transit use is sometimes classified as active transportation because it usually involves walking to and from transit stops<sup>2</sup>.

# 1.4 WHY ACTIVE AND SUSTAINABLE TRANSPORTATION?

Municipalities across Canada are increasingly recognizing the value of AST, and all large cities in Canada have produced pedestrian and cycling strategies<sup>1</sup>. A shift is underway, not just in Canada, but all over the world, to focus on pedestrian, cycling, and transit infrastructure, and not simply infrastructure for vehicles<sup>3</sup>. This movement has gained momentum because AST offers health, economic, and environmental benefits to both individuals and the public<sup>1</sup>.

The Federation of Canadian Municipalities (FCM) reports that active transportation is an accessible transport mode, and is

more inclusive of children, youth, low-income families, and persons with disabilities who may otherwise be excluded from transportation plans that are automobile-driven <sup>4</sup>. The FCM recommends enhancing accessibility by building streets that give priority to those who are slower and more vulnerable, offering pedestrians and cyclists with off-road options, and connecting active transportation users to transit and end-of-trip facilities, such as secure bike storage and lockers.

This strategy recognizes that, due to various constraints, AST is not always a convenient or feasible choice for all trips or all individuals. Rather than restricting the use of motor vehicles, this strategy focuses on providing enabling conditions for AST, so that individuals who wish to engage in AST, or have no other option, can do so in an enjoyable and safe manner.

# 1.5 PROJECT SCOPE

Although this strategy offers comprehensive recommendations, it was developed to increase the use of AST to and from Providence Care Hospital, and is therefore targeted towards AST in the context of transportation, and not recreation. Therefore, this strategy does not address the network of pathways that will surround the future hospital, and which are intended for recreational and therapeutic purposes. Due to the time frame of the project, it was not feasible to conduct detailed audits of the site for walkability, bikability, or safety. Although substantial consideration was given to accessibility for individuals with disabilities, this project did not review technical requirements under the Accessibility for Ontarians with Disabilities Act (AODA). Finally, costs were not calculated for the recommendations proposed in this report. However, recommendations were chosen with consideration given to feasibility of implementation and the potential for impact.

# **1.6 REPORT OVERVIEW**

This report is composed of eleven chapters. Following the introductory outline of AST in this chapter, Chapter Two provides a variety of background information, including the health, environmental, and economic benefits of AST, as well as the determinants of AST usage. The chapter describes the site context of the future Providence Care Hospital, and concludes with a review of relevant provincial and municipal policies.

Chapter Three presents several Canadian and international case studies that provide best practice examples of AST in both workplace and municipal contexts. Policy, programming, and infrastructure modifications that have encouraged people to use AST are examined. Chapter Four summarizes the primary research findings that were collected during the project. Primary research included a spatial analysis of employee commute distance, an electronic employee survey, a community workshop, and interviews with key stakeholders and experts. Three key challenges were identified during the research process, and they are outlined in this chapter.

Chapters Five through Nine outline recommendations meant to comprehensively improve conditions for using AST to and from the hospital. These recommendations are organized by chapter into general, walking, cycling, transit, and carpooling. Per chapter, recommendations are organized as those targeted towards Providence Care or the City of Kingston, and those that will require collaborative efforts. Chapter 10 presents strategies to address the key challenges identified in Chapter Four.

Chapter Eleven provides a roadmap for stakeholders to implement the recommendations outlined in the six preceding chapters. Key challenges outlined in Chapter Four are revisited in detail. Suggested implementation timelines are presented, which are organized by "quick wins", short-term, and long-term projects.

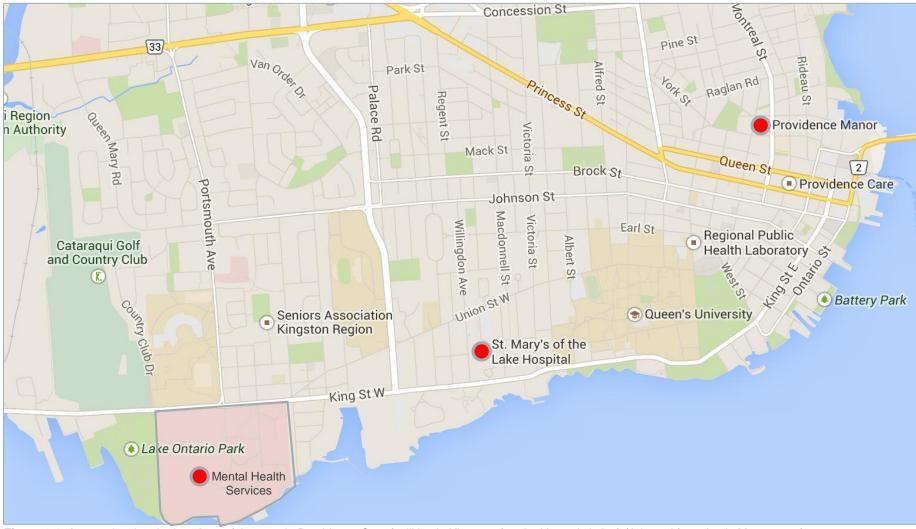


Figure 1.1: A map showing the locations of three main Providence Care facilities in Kingston (marked by red circles) (Adapted from Apple Maps, 2013).

# 1 - INTRODUCTION



**Figure 1.2:** Aerial photo of the site, outlining the KPC lands, Mental Health Services, the future Providence Care Hospital, and surrounding institutions. (Adapted from City of Kingston, 2013).

<sup>1</sup> Transport Canada. (2011). Active transportation in Canada: A resource and planning guide. Retrieved October 20, 2014 from http://www.tc.gc.ca/media/documents/programs/atge.pdf

<sup>2</sup> Besser, L. M. & Dannenberg, A. L. (2005). Walking to public transit: Steps to help meet physical activity recommendations. *American Journal of Preventive Medicine*, 29(4), 273-280. doi: 10.1016/j.amepre.2005.06.010

<sup>3</sup> Oxley, J., Fildes, B. N., & Dewar, R. E. 2004. Safety for older pedestrians. In Transportation Research Board, *Transportation in an* aging society: A decade of experience, conference proceedings (pp. 167-191). Washington, DC: Transportation Research Board.

<sup>4</sup> Federation of Canadian Municipalities [FCM]. (2008). *Communities in motion*. Ottawa: Federation of Canadian Municipalities.

# 2 BACKGROUND

2.1	BENEFITS OF AST	9
	2.1.1 HEALTH AND SOCIAL BENEFITS	9
	2.1.2 ENVIRONMENTAL BENEFITS	.10
	2.1.3 ECONOMIC BENEFITS	
2.2	Costs of AST	.11
2.3	DETERMINANTS OF ACTIVE AND SUSTAINABLE TRANSPORTATION	NC
		.12
	2.3.1 BUILT ENVIRONMENT	.12
	2.3.2 PERSONAL CHARACTERISTICS	.13
2.4	SITE CONTEXT	.15
	2.4.1 KINGSTON CENSUS PROFILE	.15
	2.4.2 Travel Characteristics of Kingston Residents	.15
	2.4.3 CURRENT AST PROJECTS AND RECENT ACHIEVEMENTS.	
	2.4.4 Providence Care	.17
	2.4.5 CURRENT ACCESS TO MENTAL HEALTH SERVICES	
2.5	POLICY CONTEXT	. 22
	2.5.1 PROVINCIAL POLICIES	.22
	2.5.2 CITY OF KINGSTON POLICIES	.24

This chapter begins by highlighting the benefits that result when participation rates in active and sustainable transportation (AST) increase. As part of a balanced analysis, the costs associated with implementing AST infrastructure are also discussed. Additionally, this chapter considers the factors, or determinants, that influence an individual's choice to engage, or not, in the various forms of AST, including walking, cycling, taking transit, and carpooling. The major determinants that influence AST usage are also discussed, although this discussion is not exhaustive as a multitude of interacting determinants shape the decisions that people make.

# 2.1 BENEFITS OF AST

Promoting and investing in AST produces benefits in terms of health and social well-being, the natural environment, and economics. Many of these benefits accrue to the general public, and not just to people who participate in AST. Canadian municipalities are increasingly recognizing the value of investing in AST, and almost all new transportation plans contain measures to increase AST<sup>1</sup>.

# 2.1.1 Health and Social Benefits

Engaging in active modes of transportation such as walking or cycling can be an effective way for people to acquire recommended levels of daily physical activity. Canadian guidelines suggest that adults should incorporate at least 150 minutes of moderate-to-vigorous physical activity per week, in bouts of 10 minutes or more<sup>2</sup>. However, according to a recent Statistics Canada report, only 15% of Canadian adults meet this target <sup>3</sup>. A lack of physical activity puts people at risk for developing a number of diseases, including cardiovascular

disease, some types of cancer, osteoporosis, diabetes, obesity, high blood pressure, depression, stress, and anxiety <sup>4</sup>. For instance, the likelihood of being obese goes up for every hour spent in a car per day, while it goes down 5% for every kilometre walked<sup>5</sup>. Fortunately, physical activity can become a habit when active transportation is built into daily routine, such as a commute<sup>6</sup>. Additionally, choosing walking as a commute option is an inexpensive, low-impact, and low-risk exercise that most people can do<sup>7</sup>.

Besides choosing active modes like walking or cycling, even deciding to take transit can offer health benefits. For instance, the act of walking to and from bus stops allows 29% of bus users to achieve 30 minutes of daily physical activity<sup>8</sup>. A recent study conducted in Montréal found that the average transit round trip involved walking 2,500 steps, which is equal to 25% of daily recommended physical activity<sup>9</sup>. Although this distance may be an inconvenience for some individuals, it can be promoted as a positive health benefit.

Switching to walking, cycling, or taking transit can also improve mental wellbeing, as driving on congested roads is linked to higher than average stress levels <sup>10</sup>. Additionally, regular exercise, which active transportation allows people to achieve, is linked to reduced stress and anxiety, and improvements in mood and sleep quality<sup>11</sup>.

Reducing the number of vehicles on the road also lowers harmful air pollution emissions. Air pollution is linked to higher mortality rates due to respiratory and cardiovascular health impacts and increased risk of cancer <sup>12</sup>. Fortunately, improvements in air quality have been shown to reduce population mortality rates <sup>13</sup>. It is also notable that while active transportation users may be exposed to higher levels of air pollution than motorized transportation users, the health benefits of increased physical activity have been shown to

outweigh the health risks of pollution exposure for most individuals<sup>14</sup>.

Planning for and promoting AST also has social benefits. For instance, neighbourhoods designed to be walkable are also known to encourage a sense of community by providing people with more opportunities for social interaction<sup>15</sup>. Driving, on the other hand, disconnects people from their immediate surroundings, and reduces the chance to connect with other people and nature <sup>16</sup>. Pedestrian and cyclist activity makes streets lively and interesting, and also makes neighbourhoods safer by increasing the number of 'eyes on the street<sup>17</sup>.

# 2.1.2 Environmental Benefits

The environmental costs of transportation are reduced when more individuals switch from the use of single-occupant vehicles to active and sustainable modes. Motorized transportation is a major contributor to greenhouse gas emissions and air pollution. In 2009, road transportation accounted for almost 20% of Canadian greenhouse gas emissions, with passenger transportation (as opposed to freight transportation) contributing 45% of these emissions<sup>1</sup>. Transportation is the largest source of air pollution in the country and releases nitrogen oxides, volatile organic compounds, particulates, and carbon monoxide into the air, which poses risks to human health and the natural environment<sup>18</sup>. This pollution directly damages vegetation and is a component of acid rain<sup>19</sup>. While improvements in technology can mitigate some of this pollution, reducing the use of singleoccupant vehicles is necessary to decrease air pollution overall<sup>20</sup>. Active transportation produces no direct emissions, and sustainable options like transit and carpooling reduce the number of single-occupant vehicles on the road.

Reliance on private vehicles produces a corresponding need for numerous and large parking lots. As the natural environment becomes paved more precipitation flows directly into lakes and streams via sewers, rather than being absorbed through the ground<sup>21</sup>. This runoff is contaminated with oil, fuel, salt, and sediment, and is a major contributor to degraded surface water quality<sup>22</sup>. Parking lots also worsen urban heat island effects, and are generally aesthetically unappealing <sup>23</sup>. Furthermore, the mining and production of fossil fuels, which most vehicles rely on, also contributes to environmental destruction<sup>16</sup>. Finally, vehicle collisions threaten certain wildlife populations, in particular amphibians and reptiles<sup>24</sup>.

# 2.1.3 Economic Benefits

Increasing the number of people who engage in active, rather than sedentary, transportation can indirectly reduce national spending on medical costs associated with physical inactivity. In 2009 the financial burden in Canada of adult physical inactivity was \$6.8 billion, which represented 3.7% of total health care costs <sup>25</sup>. In Kingston, medical costs due to adult physical inactivity total \$31.3 million per year; however a modest 10% decline in physical inactivity would save \$2.8 million per year<sup>26</sup>. Shifting to active modes even results in workplace productivity benefits, as physically active adults have better work performance and reduced absenteeism<sup>27</sup>. Both the number of cars on the road and the distances they travel has increased since the 1990s, and it is difficult, or even nearly impossible in many urban environments, to build roads to keep up with the resulting congestion<sup>28</sup>. Congestion imposes costs to roadway users and the public that include increased travel time, vehicle operating costs, stress, and pollution emissions<sup>16</sup>. When properly designed, active transportation infrastructure can shift people out of their cars and alleviate congestion<sup>16</sup>.

When more people switch from driving to other modes, extra parking spaces will fill the landscape. Pedestrians obviously do not require any parking spaces, and up to twenty bicycles can fit in the space it would take to park one car<sup>16</sup>. These extra spaces

may remain unoccupied in the short term but they can be rented or sold, or converted to more valuable uses such as buildings, green space, or public plazas<sup>29</sup>.

As pedestrian, cycling, and transit infrastructure improves, some households may be able to reduce or eliminate their car ownership, which is a large financial expenditure<sup>16</sup>. Depending on which source you consult, vehicle costs are either the second or third largest category of expenditures in a typical household<sup>30</sup>. On average, Canadians spend \$5,250 annually on vehicle costs, including payments, insurance, gas, and maintenance<sup>30</sup>. In contrast, monthly Kingston Transit passes cost \$72, amounting to a total cost of \$864 per year, or 16% of what a vehicle would cost to operate<sup>31</sup>. Carpooling reduces the costs of commuting (fuel and parking) by at least half, depending on how many people participate in the carpool. Finally, local businesses can benefit from municipal support for AST, as implementing pedestrian and cyclist supportive infrastructure is correlated with increased local retail revenue and drops in retail vacancy rates<sup>32</sup>.

# 2.2 Costs of AST

Despite the benefits of investing in AST, some municipalities, institutions, and businesses are reluctant to do so because of the upfront cost and time involved, especially when it comes to developing appropriate infrastructure and land use patterns<sup>28</sup>. Active transportation may be viewed as a luxury item, particularly by small municipalities with modest budgets <sup>33</sup>. However, not all AST projects need to be expensive or large to have an impact. For instance, municipalities can capture 'low-hanging fruit' by painting bike lanes on sufficiently wide roads<sup>33</sup>. Fortunately, more expensive infrastructure is usually long-lived and provides long-term benefits that generally outweigh the costs<sup>28</sup>. Given the comprehensive long-term benefits that AST

can provide, municipalities and institutions need to carefully weigh future transportation policies, programs, and infrastructure investments. This strategy recognizes that supporting AST is an ongoing process, and recommendations in the strategy implementation chapter are organized into quick wins, short-term projects, and long-term projects.

# 2.3 DETERMINANTS OF ACTIVE AND SUSTAINABLE TRANSPORTATION

A number of factors, or determinants, influence an individual's choice of transportation mode. The relative influence of these factors varies from individual to individual, and situation to situation. For instance, poorly maintained sidewalks could pose greater challenges to individuals with mobility challenges than those without. Understanding why people make the travel choices they do is the first step in developing an AST strategy. The description of determinants that follows is not exhaustive, but covers the major factors that influence travel.

# 2.3.1 Built Environment

The built environment refers to surroundings that have been actively shaped by humans, and includes settings as varied as congested freeways, lively playgrounds, and quiet parks<sup>33</sup>. There are a number of factors within the built environment that affect travel mode choice, and poorly designed elements can present both physical and psychological barriers to AST<sup>7</sup>.

# Density, Connectivity, and Land use Mix

Urban form that features mixed land uses, a high degree of street connectivity, and reasonable density tends to enable AST<sup>34</sup>. This occurs because as the magnitude of these factors increases, distance between destinations is effectively shortened. A mix of land uses in a dense form means that housing, shopping, and employment are within range of each

other, and do not require long trips by car<sup>35</sup>. Additionally, high street connectivity results in routes that are more numerous and direct between locations<sup>7</sup>.

# **Presence of AST-Supportive Infrastructure**

Besides large scale urban form, there are specific features of the built environment that facilitate or impede AST. Features that enable AST include wide and well-maintained sidewalks, benches, bike lanes, crosswalks, and end-of-trip facilities like showers and secure bike storage<sup>33</sup>. Higher rates of physical activity are associated with pleasant greenery and trees, while the presence of litter tends to discourage physical activity<sup>36</sup>. Research has also shown that cyclists are much more likely to seek routes that are far from noise and air pollution, feature pleasant scenery, and offer separated bike paths<sup>37</sup>.

# Safety

Both perceived and real safety issues keep many people from walking, cycling, or using transit<sup>34</sup>. People may fear injury from traffic or slipping on poorly maintained pathways, or they may worry about attacks or theft<sup>33</sup>. While most people tend to be more concerned about safety from traffic than safety from crime<sup>38</sup>, research has also shown that women tend to be more fearful about personal security than men, particularly while walking at night or through isolated areas such as parks<sup>39</sup>.

Features that make pedestrians and cyclists feel secure while travelling are sometimes unpopular with drivers; these features include narrow and fewer vehicle lanes, bike lanes, trees near the street, and traffic calming measures like speed bumps and raised crosswalks<sup>40,34</sup>. However, drivers naturally drive slower in these environments and they are more aware of their surroundings, meaning that if collisions do occur they are on average less severe than collisions on high-speed streets<sup>40</sup>. Overall, research has shown that pedestrians and cyclists

perceive streets with fast moving traffic as unsafe and will avoid them when possible<sup>34</sup>. This means that a lack of streets with slower moving traffic impedes the mobility of non-motorized travellers.

Of key importance in the Canadian climate is that routes that are considered safe for walking and cycling in the summer often become unsafe in the winter. This occurs when conditions on roads and sidewalks become icy and snow is ploughed onto the shoulder, narrowing the space available for bikes. In a survey of Queen's University students, it was noted that a majority of students considered these types of conditions as barriers to winter cycling<sup>41</sup>. Transit users are also negatively affected by poor winter maintenance, as uncleared sidewalks make it difficult for people to travel to and from bus stops.

## 2.3.2 Personal Characteristics

In order to consider and target a wide variety of individuals, AST strategies must take into account how different recommendations will impact people with different personal characteristics. Strategies that only consider an "average user" will exclude certain groups of people from participating in AST. This is why comprehensive public consultation is a key component of planning for AST.

## Gender

American research shows that men and women are equally likely to commute by walking <sup>42</sup>. However, women in North America are less than half as likely as men to cycle for transportation <sup>43</sup>. This may be because females are more concerned about danger from traffic and assault<sup>41</sup>. Interestingly, women and men cycle at almost equal rates in countries that are more bicycle-friendly, such as The Netherlands, Denmark, and Germany, which indicates that improving cycling infrastructure would encourage more women to cycle<sup>44</sup>.

# **Mobility**

Mobility is another important personal-level determinant of engagement in AST. Fear of injury and physical difficulties may discourage individuals with low mobility from participating in AST<sup>45</sup>. In general, although of course this is not always the case, older adults may have more difficulty participating in walking, cycling, and taking transit because tasks like walking, balancing, and climbing steps become more difficult with age<sup>46</sup>. Better design of the built environment and transportation systems can facilitate AST for people with lower than average mobility.

# **Knowledge and Skills**

Some people lack the skills and/or knowledge to cycle confidently, even when they are interested in cycling for transportation. Training programs are one way to help people feel more comfortable<sup>47</sup>.

Travelling by public transit can be relatively complex, and potentially intimidating, for people unfamiliar with the system, as it requires knowledge of fares, schedules, stops, and routes<sup>48</sup>. Additionally, individuals who are not as familiar with computer technology may find it more difficult to plan trips using digital maps and transit schedules<sup>46</sup>.

# Income

Income is strongly linked to travel mode choice. In Canada, commuters with household incomes of \$25,000 or less are more than twice as likely to walk and take public transit to work compared to commuters with a household income of \$50,000 or more<sup>49</sup>. This relationship could be explained by the fact that, as household income rises, so too does car ownership. An American study found that while only 73.5% of households with an annual income below \$20,000 own a car, 95% of households with an income between \$20,000 and \$39,000 own a car<sup>43</sup>.

Owning a car provides a strong incentive to travel by car, and car ownership is the strongest predictor of travel mode choice<sup>43</sup>. Moving from not owning a car to owning a car reduces walking trips from 41% to 13%, and transit trips from 19% to 2.7% of trips<sup>43</sup>. People who carpool are more likely to have lower incomes than people who drive to work alone<sup>50</sup>.

#### **Having a Drivers Licence**

While car ownership increases with household income, fewer Canadians are opting to get their drivers licence than before. Between 1999 and 2009, the number of licenced Canadian drivers between the ages of 16 to 54 years actually fell<sup>51</sup>. Both the rising cost of driving and the increasing value placed on AST are potentially responsible for this drop<sup>52</sup>. In contrast, the rate of licence-holding seniors has increased, and older adults rely more heavily on driving and being driven than ever before<sup>51,53</sup>. This trend suggests that many seniors have limited access to alternate modes, and it is particularly troubling given the likelihood of losing one's drivers licence with increased age. Therefore, any AST transportation strategy needs to consider the needs and wants of seniors. For instance, well-designed urban form and infrastructure in The Netherlands and Germany allows seniors to make about half of their trips by walking and cycling, while American seniors, by contrast, make only 6% of their trips using active transportation<sup>44</sup>.

#### Convenience

The convenience of AST for individuals is reflective of both the built environment and personal characteristics. For instance, an individual may live within walking distance of work but be unable to walk to work because of having to drop children off at daycare. Having to drop children off at school makes people much less likely to carpool<sup>54</sup>.

As distances between destinations increase, the car usually becomes a faster travel choice. This is reflected in the mode choice of commuters, who become much more likely to drive the farther they live from work<sup>49</sup>. In general, car drivers are more likely than other mode users to view their mode as flexible and convenient<sup>55</sup>. However, many people who walk or cycle to work value their commute, and would rather have a pleasant commute that is longer, than a stressful commute that is shorter<sup>16</sup>. In general it appears that individuals who commute by walking or cycling prefer their commute more than those who take transit or drive<sup>56</sup>.

#### **Values and Habits**

Values and societal pressure also affect a person's choice of travel mode. For instance, concern for the environment is associated with limiting overall driving and the likelihood of cycling regularly<sup>57</sup>. People who are physically active in other areas of their life are more likely to use active modes for transportation<sup>58</sup>.

A recent study examined the commuting patterns of employees before and after workplace relocation, and found that the relocation provided an ideal habit disruption event, meaning that employees were significantly more likely to break their previous commuting behaviours and switch to new modes <sup>59</sup>. This suggests that the opening of Providence Care Hospital may provide an ideal opportunity for hospital employees to change their commuting habits.

#### 2.4 SITE CONTEXT

#### 2.4.1 Kingston Census Profile

Kingston is a medium-sized Canadian city with a permanent population of 123,000 people within subdivision boundaries<sup>60</sup>. The median age of Kingston's permanent residents is 40.3 years, falling just 1% below the national median age. According to the 2011 National Household Survey, 83.1% of residents in the Census Metropolitan Area (CMA) commute to work by car (see **Table 2.1**)<sup>61</sup>. Meanwhile, transit use in Kingston is less than half the national average. These statistics highlight the fact that, like most Canadian cities, the primary mode for travelling to work in Kingston is the private automobile.

Mode	Kingston Census Metropolitan Area	Canada
Private Automobile	83.1%	78.6%
<ul><li>Driver</li></ul>	75.5%	73.1%
<ul> <li>Passenger</li> </ul>	7.6%	5.5%
Active Transportation	10.7%	7.6%
<ul><li>Walking</li></ul>	8.5%	6.2%
<ul><li>Cycling</li></ul>	2.2%	1.4%
Public Transit	5.1%	12.7%
Other	1.1%	1.2%

**Table 2.1:** Summary of main mode of commute in Kingston CMA, derived from the 2011 National Household Survey Data Tables (NB: population in the Kingston CMA is 159,561).

Notwithstanding higher than average rates for commuting by private automobile, rates for walking and cycling to work are approximately 27% and 36% above the national average, respectively<sup>61</sup>. In fact, the Kingston CMA has the second-highest rate of active transportation in Canada (see **Table 2.2**)<sup>62</sup>. Despite relatively low transit ridership compared to the national average, the Kingston CMA rates eleventh-highest for

walking, cycling, or taking transit to work<sup>62</sup>. It should be noted that the census does not capture the prominent student body that lives and commutes in the city for eight months of the year. As such, all values presented in this profile are conservative.

**Table 2.2:** Active transportation rates in various Canadian CMAs (Statistics Canada, 2013).

Rank	Census Metropolitan Area	Modal Split for Walking and Cycling to Work	Modal Split for Walking, Cycling and Transit to Work
1	Victoria	15.9%	27%
2	Kingston	10.7%	15.8%
3	Halifax	9.6%	22.1%
4	Peterborough	8.7%	12.2%
5	Ottawa - Gatineau	8.5%	28.6%
6	Vancouver	8.1%	27.8%
7	Kelowna	7.5%	10.9%
8	Québec	7.5%	18.8%
9	Sherbrooke	7.4%	11.6%
10	Saskatoon	7.1%	11.5%

#### 2.4.2 Travel Characteristics of Kingston Residents

According to the City of Kingston's Household Travel Survey, residents use AST at different rates for work and for non-work trips<sup>63</sup>. Approximately 14% of residents use some form of AST to commute; 8% of users walk, 4% use public transit, and 2% cycle to get to work. When non-work trips are examined, the rate of AST increases to 22%, with the proportion of walking trips doubling to 16%. This suggests that while residents are

taking advantage of Kingston's pedestrian-friendly environments for their daily travel activities, barriers remain for using AST as a commute option to work.

A recent cross-sectional study on active transportation provides an analysis of mode, destination, duration, and seasonal travel characteristics, specifically among walkers and cyclists, in Kingston<sup>64</sup>. The survey was administered in four independent cycles from 2009 to 2011 to represent the four seasons in Ontario, with 350 individuals per cycle for a total sample size of 1,400. Approximately 72% of survey respondents were identified as active transportation users, and 86% of active transportation users were identified as "walkers". The results of this study indicated that active transportation users in general were significantly more likely to be younger, employed, and earning lower incomes; with cyclists significantly more likely to be male, younger, and employed. Additionally, cyclists were more likely to use active transportation to commute to work, while walkers tended to access more neighbourhood-level destinations, such as grocery stores, corner stores, and parks. The mean number of minutes engaged in active transportation to reach a destination 8 to 20 minutes. Overall active transportation rates were noted be lowest in the winter, but walking rates were relatively high year-round.

Understanding the travel characteristics for Kingston residents is important for putting this AST strategy for Providence Care Hospital into perspective. For instance, Collins and Mayer indicate that younger residents are more likely than older residents to use active transportation<sup>64</sup>. While this result may reflect reduced mobility with age, it could also suggest that there is a lack of support for seniors to engage in active transportation. Given that Providence Care Hospital will employ staff and have visitors across the age spectrum, while offering services specific to seniors, there is an urgent need to develop

a comprehensive strategy for Providence Care, the KPC lands, and surrounding areas to promote AST for all ages and abilities.

#### 2.4.3 Current AST Projects and Recent Achievements

According to the City of Kingston's Climate Action Plan, Kingston faces a number of sustainability issues that stem from transportation 65. Greenhouse gas emissions in Kingston increased by 17% between 2000 and 2011 and fuel expenditures increased by 47% between 2006 and 2011. Additionally, in 2011 approximately 71% of Kingston commuters drove to work alone for an average of 15.5 minutes per day. Given these statistics, Kingston is working towards a number of goals to improve AST in all respects. For example, Kingston Transit has implemented various programs to improve ridership, such as increased peak service schedules, implementing school and college bus pass programs, and providing employee transit programs<sup>66</sup>. Likewise, a number of organizations in Kingston continue to work towards promoting AST such as Cycle Kingston, VRTUCAR (a car share service), and the Kingston Coalition for Active Transportation (KCAT), an organization that advocates for improved cycling infrastructure and the implementation of walking and biking initiatives.

Although the share of active and sustainable modes of transportation in Kingston are low in comparison to the share of automobile drivers, the City has a relatively high share of pedestrians and cyclists compared to other Canadian cities (see **Table 2.2**). The municipal leadership has expressed its desire to encourage AST in such documents as the *On-Road Bikeway Implementation Plan* <sup>67</sup> and the *Active Living Charter* <sup>68</sup>. To achieve this vision, several measures have been implemented in Kingston in recent years to facilitate AST. These measures include:

Painted bike lanes on major streets such as Bath Road,
 Taylor Kidd Boulevard, Centennial Drive, Queen Mary

Road, Johnson Street, Brock Street, Princess Street, and Portsmouth Avenue

- Curb extensions and painted crossings at several intersections on Earl Street, near Queen's University campus
- Traffic calming measures such as roundabouts (e.g., Willingdon Avenue), bumpouts (e.g., Beverly Street and Alwington Avenue), and speed bumps (e.g., Queen Mary Road)
- Courtesy crossings on Union, King, Ontario and Princess Streets; and sidewalk improvements on lower Princess Street

As directed by the Kingston Transportation Master Plan 69, Kingston Transit has set the goal of increasing transit modal share of peak commuter trips from 3% to 11%. To date, progress has been made towards accommodating this increase with the introduction of a new express route, an increase in the number of buses in the fleet, and bus stop improvements. anticipated in the Further steps Kingston Transit Redevelopment Plan 2011-201566 include two additional express routes and the introduction of intelligent transportation system (ITS) technology to provide riders with real-time bus arrival information and give transit vehicles priority at traffic signals on major corridors. The City of Kingston has also implemented a parking strategy for on-street parking near Queen's University and Kingston General Hospital. In addition to generating revenue, it is hoped that the new permit system will encourage drivers to switch to an active or sustainable mode of transportation<sup>70</sup>.

#### 2.4.4 Providence Care

Providence Care operates multiple facilities in the Kingston region, including two hospitals from which a range of healthcare services are provided. St. Mary's of the Lake Hospital, located

at 340 Union Street, provides inpatient and outpatient services that include physical rehabilitation, complex medical care, and end-of-life care. Mental Health Services, located at 752 King Street West, provides inpatient care in the areas of adult mental health, forensic mental health, and geriatric psychiatry; as well as outpatient mental health services<sup>71</sup>. Please note that King Street West will be referred to as simply King Street for the remainder of the report.

In May 2014 construction began on a new hospital facility, known as Providence Care Hospital, at 752 King Street, just south of the location of the current Mental Health Services building. This facility will consolidate and replace the services being provided by Providence Care's two existing hospitals, and it is set for occupancy in 2016 or 2017<sup>72</sup> (see **Figure 2.1** and **Figure 2.2**).



Figure 2.1: Existing Mental Health Services facility (McKendry, 2014).



**Figure 2.2:** A rendering of Providence Care Hospital (Parkin Architects Ltd., 2014).

The 57,000 square meter (618,000 square foot) facility will incorporate sustainable design and construction features and is set to achieve a Leadership in Energy and Environmental Design (LEED) Silver certification<sup>72</sup>. A 30-year contract to design, build, finance, and maintain (DBFM) Providence Care Hospital, worth approximately \$810 million, was awarded to Integrated Team Solutions<sup>73</sup>.

The redevelopment of Providence Care's facilities is occurring at the same time that planning is underway for redevelopment of the Kingston Provincial Campus (KPC), a 49 hectare site on which Providence Care Hospital will be located. A Master Plan and Block Plan, both of which are comprehensive long range plans, have been produced to guide future development of the campus and accommodate the needs of Providence Care Hospital <sup>74</sup>. These plans are directly pertinent to Providence Care's future plans and are discussed below.

#### **Kingston Provincial Campus Master Plan**

The provincially-owned KPC property is located south of King Street and extends to Lake Ontario (see **Figure 2.3**). The campus is managed by Infrastructure Ontario (IO), formerly the Ontario Realty Corporation (ORC), which is responsible for providing the Province with real estate services. IO maintains this site in its land portfolio and has undertaken a strategic accommodation and asset planning operation for this area.

During the first stages of this planning process, IO acquired planning services from planningAlliance to conduct a multifaceted planning study in July, 2010. The overall objective of this planning study was to consider how to properly utilize the KPC land and buildings on site, currently and in the future, in a manner that accommodates the site's natural and cultural heritage. The result of this study was the creation of a Master Plan and Block Plan.



**Figure 2.3** Location of the Kingston Provincial Campus (outlined in red) (Adapted from Google Maps, 2014).

The Master Plan indicates that KPC's institutional and recreational character should be maintained. In addition to the Providence Care facility, the KPC lands also contain various Provincial Ministry offices which will remain in operation, as well as several heritage buildings, including Canada's first purposebuilt mental health facility.

The KPC has been divided into six land use areas (see **Figure 2.4**), which are outlined in the Master Plan<sup>74</sup> and include:

- The open space area, which includes protected land designated as cultural heritage, natural heritage, or natural hazard land
- The adaptive reuse area, which contains existing heritage buildings that are currently being used as Provincial ministry offices
- The *hospital block*, the current site of Mental Health Services and future site of Providence Care Hospital
- The buffer block, which contains land for future long term medical and health care needs
- Two future use blocks, where residential and commercial development will likely occur



Figure 2.4: Master Plan land use areas of the KPC (planningAlliance, 2011).

#### **Kingston Provincial Campus Block Plan**

In conjunction with the Master Plan, a Block Plan was completed to provide guidelines for future development within the six areas defined in the Master Plan. These guidelines were based on market analysis, compatibility of adjacent land uses, public consultations, and considerations of both provincial and municipal policies.

Three Block Plan options were initially designed that varied in their configurations of proposed development. Two information sessions were held to provide the public with information on the plans, discuss existing opportunities and constraints, and obtain community feedback on the three proposed designs.

During these consultation sessions some key public concerns became apparent, including: (1) concern over increasing traffic volumes; (2) the need for a path to better connect the open space on KPC to King Street; (3) the need to improve transit-oriented development options; and (4) the need to improve connections between KPC and adjacent areas, such as Lake Ontario Park to the west and Portsmouth Village to the east.

Based on public feedback, a hybrid of the three proposed block options was chosen, forming the Preferred Block Plan. This plan entails a total of 549 new residential units, which will consist of 10% low density, 62% medium density, 9% high density, and 19% mixed use residential with small scale commercial. The residential blocks were configured to be compatible with surrounding land uses, and included consideration of roadway and traffic patterns.

#### 2.4.5 Current Access to Mental Health Services

At present, Mental Health Services, as well as the location of the future Providence Care Hospital, can be accessed by a number of transportation modes, as shown on the maps that follow.

#### **Motorist Access**

By vehicle, the site is accessed from King Street West (King Street) at Portsmouth Avenue or McDonald Avenue. Parking is provided free of charge at Mental Health Services and at other locations on the KPC. Motorist routes and parking are indicated in **Figure 2.5**. Traffic congestion is common on King Street near the KPC during peak hours. To a lesser degree, some congestion occurs throughout the day at the intersection of King Street and Mowat Avenue, immediately east of the campus, where three streets converge with a Tim Hortons restaurant.



**Figure 2.5:** Illustration of current motorist access to MHS (Adapted from City of Kingston, 2013).

#### **Pedestrian Access**

Pedestrians can access Mental Health Services most efficiently via a newly replaced sidewalk from King Street at Portsmouth Avenue, and a path which terminates near King Street and McDonald Avenue. The facility can also be accessed via a

desire line (informal pathway) at King Street and Mowat Avenue, which connects the KPC to an adjacent restaurant; and via the Waterfront Trail, which crosses the south end of the KPC. However, the Waterfront Trail is an indirect route for most residents and provides a recreational pathway more so than a commuter pathway. Main pedestrian routes, the informal pathway, and the waterfront trail are indicated in **Figure 2.6**. Lighting on the Waterfront Trail is limited at night, particularly in the section crossing the KPC and Lake Ontario Park. Although the lighting is adequate around the existing Mental Health Services building, workshop findings suggest that the isolated location causes some employees to feel unsafe when they are walking to or from their vehicle at night.



**Figure 2.6:** Illustration of current pedestrian access to MHS (Adapted from City of Kingston, 2013).

#### **Cyclist Access**

Cyclists can access the site with vehicles from King Street and, less directly, from the Waterfront Trail, which is a multi-use path (see **Figure 2.7**). As a result of traffic congestion, the limited presence of cycling lanes, and intersections without designated cycling infrastructure, workshop findings indicate that cyclists cannot safely navigate the portion of King Street near the KPC. A single, outdoor location is provided for bicycle storage at Mental Health Services. Many employees feel the location is not secure and choose to store their bicycles at informal locations within the building<sup>11</sup>.



Figure 2.7: Illustration of current cyclist access to MHS (Adapted from City of Kingston, 2013).

#### **Transit Access**

While Kingston Transit does not provide a bus route that enters the KPC, five standard routes service King Street, immediately to the north of the KPC. Heading east, daytime service occurs at least every 15 minutes. Heading west, daytime service occurs at least every 30 minutes. Evening and Sunday service occurs at reduced frequency. In addition to these routes, an express route also serves King Street West every 15 minutes at peak times and every 30 minutes at off-peak times. The express and standard routes and stop locations are illustrated in **Figure 2.8**. Buses do not serve the KPC between 11:30 PM and 6:15 AM, making public transit an impractical option for some shift workers at the hospital.



**Figure 2.8:** Illustration of current transit access to MHS (Adapted from City of Kingston, 2013).

#### 2.5 POLICY CONTEXT

A review was conducted of Provincial and City of Kingston policies that relate to supporting AST to Providence Care Hospital. The aim of this policy review was to understand how the goals of this project align with strategic direction set by these governing bodies, and to determine the context in which recommendations could be made. Significant details of each policy are outlined in the following sections.

#### 2.5.1 Provincial Policies

Municipalities derive their authority from the Province, meaning that the responsibilities they have are delegated by the provincial government. Therefore, when plans are created at the local level it is necessary to review relevant provincial policies. This section briefly outlines two policies which guided the strategy.

#### Provincial Policy Statement, 2014<sup>75</sup>

Ontario's *Provincial Policy Statement* (PPS) provides provincewide direction to municipal policies regarding land use planning. The PPS guides municipalities in developing Official Plans and informs planning decisions. As such, this AST strategy must be consistent with PPS directives. There are several sections of the PPS which were taken into account:

- Section 1.5.1 Healthy, active communities should be promoted by planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and facilitate active transportation and community connectivity.
- Section 1.6.7.3 As part of a multimodal transportation system, connectivity within and among transportation systems and modes should be maintained and, where possible, improved including connections which cross jurisdictional boundaries.

- Section 1.6.7.4 A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and active transportation.
- Section 1.8.1 Planning authorities shall support energy conservation and efficiency, improved air quality, reduced greenhouse gas emissions, and climate change adaptation through land use and development patterns which:
  - promote the use of active transportation and transit in and between residential, employment (including commercial and industrial) and institutional uses and other areas.

#### Highway Traffic Act, 1990<sup>76</sup>

The *Highway Traffic Act* of Ontario (the OHTA) specifies the rules of the road, vehicle and licence regulation, and other aspects of public road usage. The OHTA is provincially mandated, meaning that municipalities can only create traffic by-laws that are consistent with it.





**Figure 2.9:** (left) Courtesy crossing signage in Kingston (City of Kingston, 2013).

**Figure 2.10:** (above) Additional sign at a courtesy crossing in Kingston (City of Kingston, 2013).

Unlike in all other Canadian provinces, the OHTA does not give pedestrians the right of way over vehicles at uncontrolled crossings<sup>77</sup>. This means that pedestrians only have the right of way at traffic control signals, intersection pedestrian signals, pedestrian crossovers, stop signs, yield signs, and designated school crossings with a crossing guard<sup>78</sup>. In response to these provincially mandated laws, the City of Kingston has responded by implementing Courtesy Crossings. At these locations, vehicles still have the right of way, but drivers have the option of stopping for pedestrians at their will. These crossings are usually marked with large fluorescent yellow signs and white ladder-type painted crosswalks on the pavement (see **Figure 2.9**).

Although Courtesy Crossings may function adequately, they are not ideal transportation infrastructure for pedestrians attempting to cross the road. For example, these crossings offer little utility for foot traffic on busier streets where drivers often choose not to stop for pedestrians, which in turn creates a great deal of unease amongst users. This does not foster a sense of safety, particularly for people who are unable to navigate the crossings quickly.

The City has attempted to remove any false sense of security pedestrians may have by posting an additional smaller sign at Courtesy Crossings, which states "Caution Vehicles Not Required to Stop" While the objective of this sign is to inform pedestrians of the rules of these crossings, this street signage can easily be overlooked, is often hard to read, and is not age-friendly therefore it does little to inform those with visual impairments or have difficulty reading and/or understanding English (see **Figure 2.10**).

It should be noted that *Bill 173, Highway Traffic Amendment Act* (*Keeping Ontario's Roads Safe*)<sup>80</sup> currently in second reading at the Legislative Assembly, would amend the OHTA to improve

pedestrian safety by requiring motorists to yield the whole roadway to pedestrians at school crossings and pedestrian crossovers. Currently motorists only have to yield half the roadway. Additionally, under the proposed amendments, the definition of pedestrian crossover would be changed to no longer require designation by municipal bylaw. The new definition of pedestrian crossover would read, "any portion of a roadway distinctly indicated for pedestrian crossing by signs on the highway and lines or other markings on the surface of the roadway as prescribed by the regulations."

#### Ontario Traffic Manual, Book 15<sup>78</sup> & 18<sup>81</sup>

The *Ontario Traffic Manual* is a series of books produced between 2000 and 2013 by the Ontario Traffic Council (OTC) of the Ontario Ministry of Transportation. The manual is intended to provide a guide for transportation practitioners to design and implement traffic infrastructure in a consistent manner across the province and in accordance with the OHTA. For the purpose of this report, focus was placed on Book 15 – Pedestrian Crossing Facilities and Book 18 – Cycling Facilities.

#### 2.5.2 City of Kingston Policies

There are several municipal policies that relate directly or indirectly to establishing an effective AST network to and from Providence Care Hospital and in the wider Kingston community. All applicable policies and plans were reviewed by our team and taken into consideration when creating this AST strategy. This section provides a brief overview of each policy.

#### City of Kingston's Official Plan, 2010<sup>82</sup>

The City of Kingston's *Official Plan* outlines goals and policies to guide land use planning and development, supporting infrastructure, the protection of natural and cultural heritage, and resource management.

Kingston's *Official Plan* promotes active and sustainable modes of transportation and indicates that active transportation should be strengthened within the community. The *Official Plan* implies that the City is encouraging the development of a sustainable transportation system through their policies. Specifically, the document reads:

Goal: To promote an integrated and diverse transportation system for the City through the encouragement of land use patterns, density, road and site design that supports walking, cycling, and transit, as well as commercial traffic, inter-regional travel, and private vehicles. It is the intent of the transportation policies that the system is safe, convenient, affordable, efficient and energy-conserving, while minimizing environmental impacts. This will ensure that community resources are accessible to all residents and the City's health and sustainability are fostered.

#### Transportation Master Plan, 2004<sup>69</sup>

The Kingston Transportation Master Plan provides strategic direction for the City's transportation development. This plan acknowledges the range of benefits that AST offers and makes recommendations for how to increase active and sustainable modes while decreasing automobile dependency. Recommendations include improving winter maintenance of walking and cycling infrastructure, improving the frequency of peak period transit service, and regulating parking to contribute to the desired modal shift. The City is currently updating this plan, and a notable change is a new level of service for the automobile, where higher levels of congestion will be tolerated on roadways than before. This change will be accompanied by further emphasis on AST.

#### Transit Redevelopment Plan, 2011<sup>66</sup>

The Kingston Transit Redevelopment Plan, developed in consultation with transit riders, bus operators, and other City departments, outlines goals and policies for meeting transit demands in the City. The plan provides descriptions of transit modal share and rider demographics, as well as existing and forecasted demands on the transit system. In order to meet demand, the transit system will be redeveloped and changes implemented in both the short-term (from 2011 to 2015) and the long-term (post 2015). Implemented recommendations include upgraded bus shelters as well as the creation of Kingston's first express route, supported by additional standard routes. The plan includes the recommendation to introduce technology to provide real-time bus arrival information.

#### Cycling and Pathways Study, 200383

The Cycling and Pathways Study provides the City of Kingston with direction and ideas to promote cycling and walking. This report is not focused on feasibility, but rather, aims to illustrate what could be achieved in the City with respect to planning for active modes of transportation. The report proposes policy recommendations, changes to existing facilities, and support programs that could be implemented within the City. Furthermore, this study helped to inform other high level policy documents, such as the City of Kingston's Official Plan and the Transportation Master Plan.

#### **Park Policies**

The KPC sits adjacent to Lake Ontario Park, a large municipal park that attracts many visitors, and to the Waterfront Trail system, a multi-use pathway which runs along Lake Ontario. The proximity of these park spaces creates an opportunity for patients, visitors, and employees of Providence Care Hospital to engage in active living and recreation.

Lake Ontario Park was recently redeveloped into a more vibrant community facility, as recommended by the *Lake Ontario Park Revitalization Study*<sup>84</sup>. There is pedestrian, cyclist, transit, and vehicle access to the park along King Street. Additional pedestrian and cyclist access exists via the Waterfront Trail from KPC. Although Lake Ontario Park and the KPC were originally connected, a fence has separated the two sites since 2007<sup>74</sup>.

The *Parks and Recreation Master Plan* <sup>85</sup> directs the development of parks and amenities that are provided by the City of Kingston, based on the needs and priorities of Kingston's citizens. The plan recognizes that the connectivity of Kingston's park trails and infrastructure should be designed to promote active living in outdoor spaces. Additionally, the park system should allow for active transportation choices that are safe, comfortable, and accessible year-round.

One of the major considerations for park use is ensuring accessibility for an aging population. In part due to shifting demographics, going forward, all amenities and services in Kingston parks, including Lake Ontario Park, will be designed to accommodate an aging population, in accordance with the City's accessibility standards<sup>85</sup>. In keeping with these recommendations, additional connections between the KPC and Lake Ontario Park are pertinent.

#### Urban Growth Strategy, 200486

Although Kingston's projected growth rate is relatively low, the city requires an integrated approach to growth management for the next 25 years. The *Urban Growth Strategy* was developed to direct the Kingston's development with regard to infrastructure, the urban boundary, density, land use, and transportation.

The strategy emphasizes the desire to follow elements of Smart Growth. These elements include the efficient use of land space, the installation of underground utilities, and higher density development supported by frequent public transit service. Creating more liveable communities is promoted through mixed use developments that support walking and cycling commutes. The strategy supports minimum density targets, achieved through zoning standards, in key areas to foster these types of communities.

In collaboration with the *Kingston Transportation Master Plan*, the strategy concludes that future development needs to emphasize walking, cycling, and public transit, specifically along key transportation corridors, such as Bath Road. Changes could include reducing parking standards, committing to improving transit frequency and service coverage, and establishing more park and ride facilities.

#### Sustainable Kingston Plan, 2010<sup>87</sup>

The Sustainable Kingston Plan serves as a guide for the City to reach its cultural, economic, social, and environmental sustainability goals. The plan was developed based on public input and contains established indicators of sustainability.

The implementation of an AST strategy for Providence Care Hospital is supported by two themes in the plan: EC4 (Infrastructure) and EN1 (Energy, Air and Climate Change). These themes call for improving the safety and attractiveness of walking, cycling, and taking transit by improving linkages. The goal of theme EC4 is to increase the percentage of people using active modes of transportation to commute to work. Additionally, Theme EN1 looks to reduce greenhouse gas emissions and improve the air quality index of Kingston. As an alternative to single occupancy vehicle use, engaging

commuters in AST is an effective strategy to contribute towards the goals set out within this plan.

#### Kingston Climate Action Plan, 2014<sup>65</sup>

The development of the *Kingston Climate Action Plan* was guided by the four pillars of sustainability outlined in the *Sustainable Kingston Plan*. This plan targets a city-wide reduction of greenhouse gases through action in key areas such as transportation, energy, and resource management.

The plan outlines several recommendations to reduce greenhouse gas emissions in Kingston. Three key recommendations are outlined here. First, Kingston should develop an active transportation plan to promote alternate transportation modes. Second, the City should create an online transportation portal to provide useful information, such as bicycle routes. Finally, carpool and car share programs should be improved to respond to the high rates of drive-alone commuters.

#### Multi-Year Accessibility Plan, 2013-201788

The *Multi-Year Accessibility Plan* was developed to support progression and implementation of the *Accessibility Plan*. Specific to transportation development, the plan outlines current improvements and future strategies to remove accessibility barriers ingrained in the design of crosswalks, roads and bus shelters, and in the public transit service network.

#### Waterfront Trail Plan

The City of Kingston is in the process of developing the *Waterfront Master Plan* to guide the revitalization of public waterfront spaces and to improve access to these spaces<sup>89</sup>. The plan will link green spaces and create a connected urban waterfront. The Warfront Trail provides pedestrian and cycling

access to the site of the future Providence Care Hospital. The plan development began in the spring of 2014 and should be completed by the spring of 2016.

#### Transportation Model Update Study, 2009<sup>90</sup>

The Kingston *Transportation Model Update: Model Development and Calibration Report* used the results of a household survey (representing 2.3% of the population of Kingston) to update the City's transportation model and forecast deficiencies 10 and 20 years into the future. The forecasts assumed modest growth of transit ridership to 9% by 2029 (while it grew from 3% to 5% from 2002 to 2009). The report recommends that road improvements be made to meet the forecasted demand.

#### Traffic Calming Policy, 2013<sup>77</sup>

Kingston's *Traffic Calming Policy* outlines how traffic calming measures should be implemented in the City. While public support is generally strongest for four-way stop intersections and reduced speed limits, the study presents more effective measures, including raised intersections, curb extensions, and on-street parking. The document also provides guidelines for how and where traffic calming measures should be implemented. Additionally, criteria for prioritizing traffic calming projects is provided, since requests for these measures typically outweigh what is financially feasible for municipalities.

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# 3

# BEST PRACTICE CASE STUDIES

3.1 MANITOBA HYDRO – WINNIPEG, MANITOBA	.34
3.2 International Institute for Sustainable Development (IISD) – Winnipeg, Manitoba	35
3.3 MOUNT ROYAL UNIVERSITY - CALGARY, ALBERTA	.36
3.4 ACTIVE TRANSPORTATION NETWORK (ATN) – KELOWNA, BRIT COLUMBIA	
3.5 SHORT STREET PROJECT – DISTRICT OF SAANICH, BRITISH	
COLUMBIA	.38
3.6 CITY OF RICHMOND – RICHMOND, BRITISH COLUMBIA	.39
3.7 TEXAS INSTRUMENTS - DALLAS, TEXAS, USA	.40
3.8 PACIFIC NORTHWEST NATIONAL LABORATORY - RICHLAND,	
WASHINGTON, USA	.41
3.9 LAKE REGION HEALTHCARE - FERGUS FALLS, MINNESOTA, US	
3.10 BP - SUNBURY ON THAMES, UK	.43
3.11 ST MICROELECTRONICS - GRENOBLE, FRANCE	.44
3.12 CASE STUDY SUMMARY TABLE	45

In order to create an effective active and sustainable transportation (AST) strategy, it was imperative for the team to conduct a case study analysis prior to developing recommendations. Assessing successful best practices that other institutional employers and municipalities have implemented to encourage the use of AST provided a strong foundation for this strategy.

Eleven case studies are presented in this chapter, of which six are Canadian and five are international. This strategy aims to policy, programming, infrastructure recommend and modifications at both municipal (community) and employer levels; therefore case studies were chosen to represent both of these interests. Additionally, where possible, city population and employer size were also taken into consideration to make findings comparable to the context of Providence Care Hospital. Finally, each case study focuses on at least one mode of travel - walking, cycling, transit, and/or carpooling - but each case does not necessarily include all modes discussed in this AST strategy.

#### 3.1 MANITOBA HYDRO – WINNIPEG, MANITOBA

#### Context

Manitoba Hydro is located in Winnipeg, a city home to 663,000 people<sup>1</sup>. In response to needing more office space and to assist in bolstering revitalization efforts in downtown Winnipeg, Manitoba Hydro relocated 1,800 employees from the corporation's head office to a new downtown location in 2009. Manitoba Hydro was awarded the Gold Community Friendly Workplace Award in 2010, in recognition of their efforts to promote alternative modes of transportation<sup>2</sup>.



**Figure 3.1:** Park-and-ride facility at former Manitoba Hydro head office (Manitoba Hydro, n.d)

#### **Exemplary Policies**

Manitoba Hydro's corporate sustainability objectives are partially met by the promotion of green commuting options for employees. In deciding where to locate the new office, a spatial analysis of employee postal codes was completed and the new site was chosen based on access to transit<sup>3</sup>.

#### **Exemplary Programming**

Manitoba Hydro has several programs that promote AST, including subsidized transit passes through the Winnipeg Transit EcoPass program, flexible and/or condensed work

schedules that support different commuting options and schedules, a park-and-ride facility (see **Figure 3.1**) and shuttle service at the former head office location, an internal committee focused on promoting green commuting options, and the encouragement of employee carpooling to Manitoba Hydro meeting locations<sup>3</sup>. Additionally, an emergency ride home program has been established for users of AT modes<sup>2</sup>. To discourage the use of personal vehicles, parking subsidies have not been provided to employees<sup>3</sup>.

#### **AST-Supportive Infrastructure**

New infrastructure to support Manitoba Hydro's policies include heated and secure bicycle storage within the parkade, a barrier-free building and site, as well as employee showers and change rooms<sup>3</sup>.

#### Results

These green commuting initiatives have resulted in 46% of employees taking advantage of the subsidized EcoPass transit program<sup>2</sup>. Additionally, 95% of the employees living in South Winnipeg's suburbs originally used personal vehicles to commute; however, since the relocation, 65% of these residents now use alternative modes of transportation<sup>3</sup>.

- Employee relocation creates an ideal opportunity to change employee commuting habits.
- Flexible work schedules make it possible for employee to use alternate modes of transportation.
- Providing employees with options and incentives to use alternative modes of transportation successfully results in a modal switch from driving to AST in many cases.

# 3.2 International Institute for Sustainable Development (IISD) – Winnipeg, Manitoba

#### Context

The International Institute for Sustainable Development (IISD) is a not-for-profit organization focused on sustainable development public policy research at the international scale, and has offices located all over the world. IISD headquarters is located in Winnipeg and is staffed by approximately 50 employees<sup>4</sup>. In 2013 IISD was awarded the 2013 Commuter Friendly Workplace Award for its dedication to encouraging and promoting staff to use active and sustainable commuting options<sup>5</sup>.

#### **Exemplary Policies**

IISD's Green Committee tracks and reports on the progress of the organization's green commuting plans, generates new ideas and policies, and provides rationale for implementation of plans and policies<sup>5</sup>. The organization's commitment to AST aligns with its larger mandate to reduce carbon emissions and promote sustainability.

#### **Exemplary Programming**

IISD provides subsidized monthly employee transit passes through the Winnipeg Transit EcoPass program<sup>5</sup>, which allows employers to provide transit passes to their employees at a discounted rate of 5% to 100%, as well as receive an additional rebate per employee<sup>6</sup>. A staggering 83% of employees have taken advantage of this program. Additionally, IISD has an Emergency Ride Home program that provides taxi vouchers to employees should they need to get home quickly. The organization also allows teleworking (working from home) and flexible work schedules, such as compressed work weeks, both of which reduce the need for employees to commute to work<sup>5</sup>.

Lunchtime seminars cover topics like urban cycling skills, which helps employees switch to active modes by increasing their confidence.

IISD's dedication to active modes of travel and enthusiasm generated an employee participation rate of 84% in the 2013 Commuter Challenge<sup>5</sup>.

#### **AST-Supportive Infrastructure**

In order to promote cycling, walking, and running as a commuting option to work, IISD built secure bike parking as well as change room facilities, showers, and lockers<sup>5</sup>.

- Workplace participation in public challenges, like the Commuter Challenge, is an effective way to create interest in alternative modes of transportation and jump-start new commuting habits.
- It helps to provide employees with the skills and confidence to try new modes, such as cycling, by offering lunchtime seminars.
- Aligning workplace commuting strategies with broader organizational mandates, like sustainability, creates more buyin.
- Emergency ride home programs, like taxi vouchers, provide employees with the peace of mind to choose active and sustainable modes of commuting.
- Teleworking and flexible schedules, such as compressed work weeks, reduce the need for employees to commute by personal vehicles and allow for more efficient use of alternate modes of transportation.
- Subsidized transit passes provide an incentive for employees to switch from driving.

#### 3.3 MOUNT ROYAL UNIVERSITY - CALGARY, ALBERTA

#### Context

Mount Royal University (MRU) is nestled within the urban fabric of southwest Calgary, and is near to several amenities. The campus is well-connected, with buildings located conveniently close together, and it boasts a view of the Rocky Mountains along the western horizon. In 2011, 13,600 students attended MRU and 2,400 staff worked on site<sup>7</sup>.

#### **Exemplary Policies**

A key component of MRU's long-term sustainability policies is reducing the institution's ecological footprint.

#### **Exemplary Programming**

As part of their sustainability strategy, MRU created a "commuter options program" to reduce the use of single occupant vehicles and encourage both employees and students to use alternative modes of travel to and from the campus<sup>7</sup>.

The SAFEWALK program provides employees and students with an escorted walk, on or close to campus, by volunteers or campus security after dark. This program enhances pedestrian movement by allowing people to feel safe while walking home, or walking to access their bike or a bus stop. The Parking and Transportation Office on campus lends out basic bike repair kits for free to students with valid student cards.

The MRU website is a useful resource for active and sustainable commuters, and it provides a link to the City of Calgary's interactive Bikeways and Pathways Map. Additionally, the website provides information on which buses are equipped with bike racks, when bikes are allowed on the C-Train (the Calgary light rail transit system), and how to rent bike lockers at C-Train stations.

Priority parking is given to groups of two or more students or employers who register in the carpool program and agree to the Carpool Policy. Carpool program users are automatically accepted into MRU's Guaranteed Ride Home program, which provides taxi fare reimbursement in the case of a family or medical emergency, up to four times per school year.

#### **AST-Supportive Infrastructure**

MRU has invested in cycling and parking infrastructure to promote the use of AST<sup>7</sup>. Bike lockers are available (for a fee) and bike racks are located throughout the campus and can easily be located using MRU's Bicycle Parking Map (see **Figure 3.2**). There are over 50 designated carpool parking spots at several locations on campus for employees and students who register in the carpool program.



Figure 3.2 Covered bike parking on campus (MRU, 2014).

- Providing resources like informative websites and bike repair kits makes using AST more convenient.
- Providing designated parking spots and a guaranteed ride home in case of emergency makes carpooling an attractive choice of travel.

# 3.4 ACTIVE TRANSPORTATION NETWORK (ATN) – KELOWNA, BRITISH COLUMBIA

#### Context

Kelowna, located in the southern interior of British Columbia, is home to 117,000 people<sup>8</sup>. The city stretches along Okanagan Lake and is bisected by Highway 97, a main transportation corridor (see **Figure 3.3**). Many employers, amenities, recreational areas, and institutions, such as Kelowna General Hospital, Prospera Place, Okanagan College, and the University of British Columbia Okanagan (UBCO), are located within close proximity to this transportation corridor. Kelowna is currently developing an Active Transportation Network (ATN), which is a pedestrian and cycling network that runs through key areas of the City, providing a comprehensive commuting link for many

UBCO

Okanagan College

Kelowna



Figure 3.3: Proposed active transportation networks (Central Okanagan, 2012)

employees.

#### **Exemplary Policies**

Kelowna has made a concerted

effort to increase safe, convenient, and active modes of transportation such as cycling, walking, and public transit as an alternative to automobile usage<sup>9</sup>. The ATN is an action item in response to the social, economic, and environmental

sustainability objectives outlined in Kelowna's 2030 Official Community Plan: Greening our Future.

#### **Exemplary Programming**

Early success of the ATN has been attributed to community consultation during the planning phase, as well as continued communication and engagement with potential users after completion of the first phase of the network.

#### **AST-Supportive Infrastructure**

The ATN was approved by City Council in 2011 and in 20 years it will be a fully connected pedestrian and cycling transportation network. This 50 km network will connect densified urban areas by running alongside main transportation corridors, including Highway 97 and Highway 33 (see **Figure 3.3**). As of 2012 one-third of the project had been completed. The network will also connect to other active transportation corridors like the 22 km Mission Creek Greenway <sup>10</sup> and "Rails with Trails," a future multi-use pathway<sup>9</sup>.

The ATN is directed by policies that support the implementation of infrastructure like traffic calming measures; wayfinding guides, including signs, markings, and banners; a network of crosswalks; and roadway intersections geared towards pedestrian and cyclist safety<sup>10</sup>.

- Comprehensive and thoughtfully designed active transportation networks connect employees to their workplaces, making active commuting more likely to occur, as well as safer and more enjoyable for users.
- Consultation with users should extend beyond the planning phases of an active transportation strategy.

### 3.5 SHORT STREET PROJECT – DISTRICT OF SAANICH, BRITISH COLUMBIA

#### Context

Saanich, a district municipality with a population of 110,000 people, is located on Vancouver Island and is part of the greater Capital Regional District (CRD)<sup>11</sup>. In 2003 the CRD, along with the municipalities located within its boundaries, created the Regional Growth Strategy to address growth of the region in terms of transportation, population, and settlement <sup>12</sup>. Eight priority projects were identified, and one project, the Short Street Project, consisted of replacing 7 older single-family dwellings and small commercial units with a transit-oriented development of 72 condo units and 3 retail units in order to increase the modal share of transit, walking, and cycling<sup>13</sup>.

#### **Exemplary Policies**

The project developer worked closely with BC Transit and the District of Saanich to ensure that various perspectives were taken into consideration. Even more pedestrian-oriented development could have been incorporated, had design requests come in earlier<sup>13</sup>.

#### **Exemplary Programming**

Area parking was reduced by 21% in an effort to create an incentive for residents to choose more sustainable travel modes. Each resident was provided with a two-year unlimited bus pass, which BC Transit invoiced to the developer at a discounted rate of \$1.75 per trip (to a maximum of \$60 per month). Each transit pass swipe on the bus recorded data which was used to monitor resident transit use and the effectiveness of the program. The results indicated that an average of 18 trips per month were used per pass, in comparison to the five trips per month recorded by the CRD in 2003-2004<sup>13</sup>.

Residents of the development also had access to the Victoria Car Share Co-op, which had an allocated parking space on site<sup>13</sup>. Residents who own cars are able to share parking with commercial units on site, meaning they can use empty commercial parking spaces after 6pm, at which time these parking spaces are generally empty. This reduces the amount of land dedicated to parking lots.

#### **AST-Supportive Infrastructure**

The development includes 72 bicycle storage spaces in the underground parking garage and an additional 12 bike parking locations above ground<sup>13</sup>. Additionally, in order to promote walking and attractiveness for pedestrians, separated pedestrian sidewalks and facilities were constructed, and high quality landscaping was placed around the building<sup>13</sup>.

- Reduced parking space availability provides an incentive for people to travel by other modes, and sharing parking with other users reduces the need for large parking lots.
- Providing free transit passes, as well as a car sharing program for occasional use, makes it easier for people to give up driving.
- Monitoring the effectiveness of initiatives shows whether the programs are working as intended.

## 3.6 CITY OF RICHMOND – RICHMOND, BRITISH COLUMBIA

#### Context

Richmond is a city located in southwestern BC and in 2011 had a population of 190,000<sup>14</sup>. The highly urbanized city is located along the waterfront, where the Fraser River meets the Pacific Ocean, and has a temperate climate and scenic backdrop of the coastal mountain range<sup>15</sup>. In response to City Council's priority of increasing resident mobility and reducing reliance of vehicles in the 2003-2005 terms, a comprehensive strategy was created to improve pedestrian movement within the City<sup>16</sup>.

#### **Exemplary Policies**

The city's pedestrian strategy is aimed at improving pedestrian infrastructure and accessibility, developing a network of trails, educating the public on safe pedestrian practices, and fostering stakeholder partnerships<sup>16</sup>.

#### **Exemplary Programming**

The City has provided education to pedestrians and motorists in the form of brochures that identify safety tips, how to navigate crosswalks, and how to travel safely around schools and playgrounds; all of which have been distributed publicly through community organizations, malls, and safety conferences<sup>16</sup>. To encourage walking and physical activity, the City offers a \$5.00 walking kit through their program "Walk Richmond", which includes a pedometer, a comprehensive walking guidebook (in English or Chinese) with details about route locations and descriptions, terrain, washroom locations, and maps; as well as links on the Richmond website for additional information such as the location and start times of free guided<sup>17</sup>.

Other programs include working with schools and health centres to promote safe and healthy walking through designated walking weeks, safety clinics, walkability checklists in which the public can participate in and comment on, and the "Walking Yellow Wednesday" program which encourages children to commute to school by walking<sup>17</sup>.

#### **AST-Supportive Infrastructure**

Many crosswalks on three and four lane roadways have been upgraded to have overhead flashing amber lights that alert drivers when pedestrians are present; these crossings are also illuminated with overhead lights to enhance pedestrian safety<sup>16</sup>. To make road-crossings more accessible for the visually impaired, many crosswalks have been equipped with audible crosswalk signals and bright yellow coloured signage, instead of the common white signage<sup>16</sup>.

Additionally, transit stops have had landing pads, extended curbs, direct connections to sidewalks, and railings built for ease of use for those with mobility issues and those in wheelchairs<sup>16</sup>. In 2004 a 100% accessible community shuttle was implemented.

- Providing educational materials and easily accessible information to both pedestrians and motorists promotes safety and the use of walking as an alternative to driving.
- Investing in crosswalk infrastructure such as overhead lighting and audible crosswalk signals makes the perception of walking safer, thereby encouraging more people to use this form of AST.
- Programs and infrastructure for pedestrians need to incorporate the needs and preferences of individuals with impaired mobility.

#### 3.7 TEXAS INSTRUMENTS - DALLAS, TEXAS, USA

#### Context

Texas Instruments (TI) is a large employer of 6,500 employees who work out of two separate headquarters. Both sites are located in suburban areas of Dallas, Texas; a city with a population of approximately 1.3 million. Efforts by TI to reduce the environmental and financial costs of transportation originated with gas shortages and rising fuel costs in the 1970s<sup>18</sup>. Over the last two decades, the corporation has made a focused effort to get employees to use active modes of transportation to and from its two sites through their "Commute Solutions" program. As a result of this effort, TI was the first employer in North Texas to be recognized as a Bicycle Friendly Business by The League of American Bicyclists.

#### **Exemplary Programming**

TI has several programs that promote the use of AT to and from their work sites. For example, employees at TI can make use of flexible work policies that, depending on their duties, allow them to choose to telecommute or work at alternate hours to avoid heavy traffic times. TI also provides subsidies for employees who purchase annual transit passes<sup>18</sup>. Additionally, TI has subsidized the purchase of 46 passenger vans, which are able to transport 10 to 15 employees each. Volunteer drivers maintain and clean these vehicles, which are eligible to use carpool lanes and have allotted premium parking spots upon arrival. High participant satisfaction in the vanpool program is indicated by the low ridership turnover<sup>18</sup>. Other TI employees form carpools through the company's own rideshare database or a ridesharing match service provided by the regional government. Bike training classes and rides are offered for interested employees to safely and comfortably try cycling and to consider it as a commute mode<sup>19</sup>. A corporate Bike to Work Day has also been implemented to encourage this mode and raise awareness of the personal and environmental benefits of commuting by bicycle.

#### **AST-Supportive Infrastructure**

Several aspects of built infrastructure have been addressed to facilitate walking and cycling to TI. Convenient entrances, connections to footpaths and bike trails, bike repair stations, and showers are available to employees who use these modes. From 2004 to 2009, TI also worked with community partners and the local government on a project to upgrade and extend trails nearby to its locations. TI kick-started the needed fund-

raising for this project with \$400,000. This built connections in what was previously a fragmented set of trails 20. The new trail network helps active commuters reach TI, transit connections, and other destinations in the area.



and other destinations Figure 3.4: Cyclist walking through TI offices to change (Dallas Morning News, 2013).

- Large institutional employers can support local and regional efforts (such as the construction and maintenance of multiuse trails).
- Employer car-pooling programs can benefit from making use of regional ride-matching services.
- Participant satisfaction is an important factor for ensuring that trying a new transportation mode results in a long-term changes.

# 3.8 PACIFIC NORTHWEST NATIONAL LABORATORY - RICHLAND, WASHINGTON, USA

#### Context

Pacific Northwest National Laboratory (PNNL) is a scientific research laboratory within the U.S. Department of Energy and has approximately 3,700 employees. PNNL is located outside of Richland, Washington; a city of about 51,000 people. The laboratory has set organizational sustainability performance goals that include the reduction of greenhouse gas emissions. PNNL has identified transportation as a significant generator of greenhouse gases and has set measurable emission reduction goals for its fleet vehicles and for employee transportation<sup>21</sup>. The organization has set the target of reducing total greenhouse gas emissions to 13% of 2008 levels by 2020.

#### **Exemplary Programming**

PNNL has taken several steps to engage employees in more AST modes. Where job duties allow, telework and compressed schedule options are promoted to reduce the number of days that employees are required to travel to work<sup>22</sup>. Employees are encouraged to take small steps by trying teleworking, as well as alternative travel modes, once a week with the hope that a shift in transportation choices will occur.

PNNL hosted events to share best practices for alternative commuting which included a wellness challenge, bike-to-work days, and alternative commute booths at the organization's Sustainability Fair. Employees can find additional information and support for alternative commuting through PNNL's Commute Community webpage for employees<sup>22</sup>. In cases where co-worker carpools are not possible, PNNL recommends its employees to use RideShare Online, a regional website that provides tailored ride matching for its users.



Figure 3.5: Bike-to-work month results (PNNL, 2014a).

#### Results

At the end of its 2013 fiscal year, 16% of PNNL staff had signed telework agreements and 4% had reported teleworking an average of one day a week<sup>22</sup>. Additionally, over 80 PNNL employees participated in the 2014 Bike to Work Month Challenge and logged an average of 10 trips each, giving PNNL a ranking in the top 20 of over 1200 teams across the United States<sup>23</sup>.

- Online resources for employees can provide information on the benefits of alternative transportation modes, connect carpool participants, and raise awareness about special events and programs.
- Employee commuting is an area that employers can demonstrate corporate responsibility by facilitating the reduction of greenhouse gas emissions.

# 3.9 Lake Region Healthcare - Fergus Falls, Minnesota, USA

#### Context

Lake Region Healthcare (LRH) is ranked as a Silver Bicycle Friendly Business by the League of American Bicyclists. The facility is located in a suburban area within the town of Fergus Falls, Minnesota and has approximately 1000 employees. The population of the town is around 13,000. LRH administration have stated their recognition that active transportation offers benefits to employee health, the facility's work culture, and the global environment<sup>24</sup>. Employees of LRH are encouraged to choose cycling as a convenient and beneficial transportation mode through the use of infrastructure and programming.

#### **Programming**

Commuters who choose to cycle to LRH can use "bike punch cards" to track their commute mode and earn healthy lifestyle prizes<sup>25</sup>. LRH hosts free lunchtime seminars, which are open to the public, on topics such as learning to cycle, road safety, and bicycle maintenance. Tips for making cycling safe and convenient are also communicated through posters in the facility's public areas. LRH publicizes information on local cycling-related events and also coordinates bike rides for employees and community members several times yearly. Bicycles are provided for participants who do not have one available<sup>26</sup>.

One interesting initiative hosted by LRH was the "Walk to Waikiki", where the institution challenged the community of Fergus Falls to walk a collective distance of 6,162 kilometres, the equivalent of the distance between the community and Waikiki, Hawaii<sup>27</sup>. This initiative took place over six weeks in the cold Minnesota winter months, and was aimed at creating

positive physical activity habits. Participants who met certain distance milestones were entered to win a vacation to Hawaii. This event was a great example of providing a jumpstart for people to incorporate healthy habits.

#### Infrastructure

The decision to cycle to work at LRH is made more attractive by the provision of convenient, covered bike racks<sup>26</sup>. These storage facilities allow employees and members of the public to park closer to the building when they cycle. Covered bike racks also reduce wear on bicycles from precipitation.

#### Results

Programming events at LRH often draw small groups of 10-20 participants and observed increases in the number of bicycles on the campus suggest the impact reaches further than these groups<sup>26</sup>. It is estimated that more than 10% of employees commute by bicycle to LRH<sup>26</sup>. The results of the cycling initiatives contribute to the impact of the broader goals of LRH to improve community health.

- Education can increase the attractiveness and perceived safety of cycling and messages can be spread through both seminars and posters, which require active and passive participation, respectively.
- Sheltered bicycle racks in convenient locations make cycling to work and bicycle maintenance easier.
- Health care institutions can host initiatives that encourage the wider community to get travelling in active ways. Fun events are a great way to encourage healthy habits in the winter months.

#### 3.10 BP - SUNBURY ON THAMES, UK

#### **Context**

BP is a petrochemical company with an office located in Sunbury on Thames, a suburban town situated just outside of London, with a population of roughly 18,000. This site has approximately 2,500 employees. In 1998, the company relocated employees to a single site from several other sites and faced parking shortages at the new location<sup>28</sup>. BP set the objective to decrease the demand for parking spaces by improving public transit, cyclist, and pedestrian travel to its newly combined site. An external consultant was engaged to develop a mobility plan for BP employees<sup>28</sup>.

#### **Exemplary Programming**

To reduce reliance on the private automobile and encourage alternative modes of transportation, BP introduced a 20% reimbursement for annual transit passes purchased by employees. To further reduce employee travel, a telework option was offered for certain positions<sup>28</sup>.

BP created a computer based matching service for car-poolers to match drivers and passengers. The company also introduced education events to advise employees on safe and convenient commuting practices<sup>28</sup>.

#### **AST-Supportive Infrastructure**

During the building construction and site changes that were undertaken, several features were included to facilitate AST. Pedestrian and cyclist paths to and on the site were improved for safer travel. Showers and change rooms were introduced to improve the convenience of cycling. Additionally, maps of preferred routes and site access points for cyclists were displayed<sup>28</sup>.

BP has also taken several steps to facilitate public transit use by employees. New bus lines were introduced to serve the site and a free shuttle service was introduced to transport employees to the closest railway station at peak hours.



**Figure 3.6:** Traffic calming paving at BP Sunbury Business Park (Nigel Cox, 2007).

#### Results

Following the implementation of these measures, BP observed positive changes in the employee modal split between 1998 and 2001. The number of car drivers decreased from 84% to 72%, while transit users increased from 5% to 16% and cyclists from 3% to 5%<sup>28</sup>. Car passengers and pedestrian shares were not significantly affected.

- Ease of access to transit can be improved with the strategic location of bus routes and stops and a free shuttle service to nearby transfer locations.
- On site infrastructure such as paths, changing areas, and showers can encourage more employees to choose cycling.

#### 3.11 ST MICROELECTRONICS - GRENOBLE, FRANCE

#### Context

ST Microelectronics is a producer of semiconductors and is located in Grenoble, France, which has a population of about 150,000 people. This site has approximately 2,000 employees. A study attributed 40% of ST Microelectronics' overall energy consumption to employee commuting which prompted the company to introduce a mobility plan<sup>28</sup>.

#### **Exemplary Policies**

In response to a saturation of its parking supply, ST Microelectronics formed an internal working group in 2000. The working group created a transportation plan that set the objective of increasing the combined modal shares of transit, walking, and cycling from 20% to 50% by 2005<sup>28</sup>.

#### **Exemplary Programming**

ST Microelectronics has made use of programming to encourage AST modes amongst employees. Between 2000 and 2002, ST Microelectronics introduced several programs to meet the objective set in its transportation plan. The company now offers a subsidy of 80% of the cost of a regional transit pass. A free taxi or transit ride is also offered to pedestrian and cyclist commuters in case of an emergency. ST Microelectronics has further reduced its environmental impact by increasing the number of high efficiency, non-polluting vehicles in the company fleet. Employee business trips are also coordinated to encourage carpooling. Additionally, on site bike repair equipment and instruction is available to staff, cyclist safety kits are provided, and special events are held to raise awareness of the benefits of using alternative modes of travel<sup>28</sup>.

#### **AST-Supportive Infrastructure**

Varying aspects of site infrastructure at ST Microelectronics have been addressed in response to the transportation plan objective. The capacity for bicycle storage on site was doubled to include space for 200 bicycles in sheltered, secure locations. The site also features protected bicycle paths and showering and changing facilities for cyclists<sup>28</sup>. To improve the comfort of transit riders, a shelter was constructed at the bus stop near the building entrance. A free shuttle service is also provided from the site to the rail station at peak hours. Food retail services are available on site to reduce the number of offsite trips made by employees on their breaks<sup>28</sup>.

#### Results

Between 2000 and 2002, positive changes were observed in the modal share of ST Microelectronics employees. The share of drivers has decreased by 20%. Increases in other modes showed that a little more than half of these commuters switched to transit while the remainder switched to cycling.

- Employers can demonstrate commitment to transportation initiatives with efficient, non-polluting vehicles for their fleets.
- Employers can reduce vehicle trips during work hours by providing food retail services on site and by coordinating carpooling for work-related items.
- Transit pass subsidies by employers can increase ridership.
- Shuttle service between employer location and rail (transit) service provides incentive for employees to use AST.
- Guaranteed free rides in case of an emergency can remove barriers for transit and active transportation users.
- End-of-trip facilities like sheltered and secure bike storage, change rooms, and showers can make cycling a more attractive commuting option.

#### 3.12 CASE STUDY SUMMARY TABLE

**Table 3.1** A summary of each case study discussed in Chapter 3.

Case Study	Key Points
Manitoba Hydro	<ul> <li>Employee relocation creates an ideal opportunity to change employee commuting habits.</li> <li>Flexible work schedules make it possible for employees to use alternate modes of transportation.</li> </ul>
International Institute for Sustainable Development	<ul> <li>Emergency ride home programs, like taxi vouchers, provide employees with the peace of mind to choose AST.</li> <li>Subsidized transit passes provide an incentive for employees to switch from driving.</li> </ul>
Mount Royal University	<ul> <li>Providing resources like informative websites and bike repair kits makes using AST more convenient.</li> <li>Providing designated parking spots and a guaranteed ride home in case of emergency makes carpooling an attractive choice of travel.</li> </ul>
Active Transportation Network	Comprehensive and thoughtfully designed active transportation networks connect employees to their workplaces, making active commuting more likely to occur, as well as safer and more enjoyable for users.
Short Street Project	<ul> <li>Reduced parking space availability provides an incentive for people to travel by other modes, and sharing parking with other users reduces the need for large parking lots.</li> </ul>
City of Richmond	<ul> <li>Providing education and extensive easily accessible information to both pedestrians and motorists promotes safety and use of walking as an alternative to driving.</li> <li>Investing in crosswalk infrastructure such as overhead lighting and audible crosswalk signals makes the perception of walking safer thereby encouraging more people to use this form of AST.</li> </ul>
Texas Instruments	Employer car-pooling programs can benefit from making use of regional ride-matching services.
Pacific Northwest National Laboratory	<ul> <li>Online resources for employees can provide information on the benefits of alternative transportation modes, connect carpool participants, and raise awareness about special events and programs.</li> <li>Employee commuting is an area that employers can demonstrate corporate responsibility by facilitating the reduction of greenhouse gas emissions.</li> </ul>
ВР	<ul> <li>Ease of access to transit can be improved with the strategic location of bus routes and stops and a free shuttle service to nearby transfer locations.</li> <li>On-site infrastructure such as paths, changing areas, and showers can encourage more employees to choose cycling.</li> </ul>
ST Microelectronics	<ul> <li>Shuttle service between employer location and transit service provides incentive for employees to use AST.</li> <li>End-of-trip facilities like sheltered and secure bike storage, change rooms, and showers can make cycling a more attractive commuting option.</li> </ul>
Lake Region Healthcare	Sheltered bicycle racks in convenient locations make cycling to work and bicycle maintenance easier.

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# PRIMARY RESEARCH FINDINGS

4.1	SPATIAL ANALYSIS	49
4.2	4.1.1 GEOGRAPHIC DISTRIBUTION OF EMPLOYEES  PROVIDENCE CARE EMPLOYEE COMMUTING SURVEY	
	4.2.1 CHARACTERISTICS OF SURVEY RESPONDENTS	52
4.3	MODES	
4.4	4.3.1 BARRIERS AND FACILITATORS OF AST 4.3.2 BEST PRACTICES FOR AST. 4.3.3 PROBLEMATIC INTERSECTIONS INTERVIEWS	57 58
	4.4.1 FACILITATORS OF AND BARRIERS TO AST	R 58

4.5 Key Challenges for the Strategy	. 59
4.5.1 DISTANCE FROM HOSPITAL ENTRANCE TO TRANSIT SERV	ICE
	. 60
4.5.2 IMPLICATIONS OF INTRODUCING PAID PARKING	. 61
4.5.3 REQUIRED INTERSECTION IMPROVEMENTS ALONG KING	
STREET	. 62
4.6 REVIEW OF PRIMARY RESEARCH FINDINGS	65

Primary research was conducted over the course of three months in order to create a context-specific, well-informed active and sustainable transportation (AST) strategy. Research included mapping and analysing the geographic distribution of Providence Care employees, conducting an employee commuting survey, interviewing 17 key experts and stakeholders, and holding a community workshop. Team members also conducted multiple site visits, and travelled to the future site of Providence Care Hospital by walking, cycling, transit, and driving. This chapter outlines our findings and presents three key challenges that emerged from the research process.

#### 4.1 SPATIAL ANALYSIS

A geographic distribution of the home location of Providence Care employees was plotted using employee postal code data provided by Providence Care. The analysis aimed to determine how many employees could reasonably be expected to walk or cycle to Providence Care Hospital. Most people who walk to work are unwilling to make one-way trips longer than 2 km, and most people who cycle to work limit their trips to about 5 km<sup>1</sup>. We chose to plot these thresholds on the map to approximate the proportion of employees for whom active transportation is possible. However, a reasonable active commuting distance varies from individual to individual, and there is little consensus

concerning the distance of a reasonable cycling commute in the literature. As such, these distances are for reference only. It may be the case that people living 6 or 7 km away from Providence Care are willing to cycle as long as appropriate cycling infrastructure exists to support their commute.

#### 4.1.1 Geographic Distribution of Employees

**Figure 4.1** displays the geographic distribution of Providence Care employees. The red dots indicate the home locations of employees, and the star marks the future location of

Providence Care Hospital. Approximately 4% of employees live within 2 km of the hospital, 24% live within 5 km, and 76% live beyond 5 km. These findings suggest that although active transportation initiatives and policies are important in the redevelopment of the KPC site, public transit and personal automobile transportation will continue to play a major role in current and future employee journey-to-work patterns. Because of this, our strategy includes transit ridership and carpooling as approaches to making commuting more sustainable.

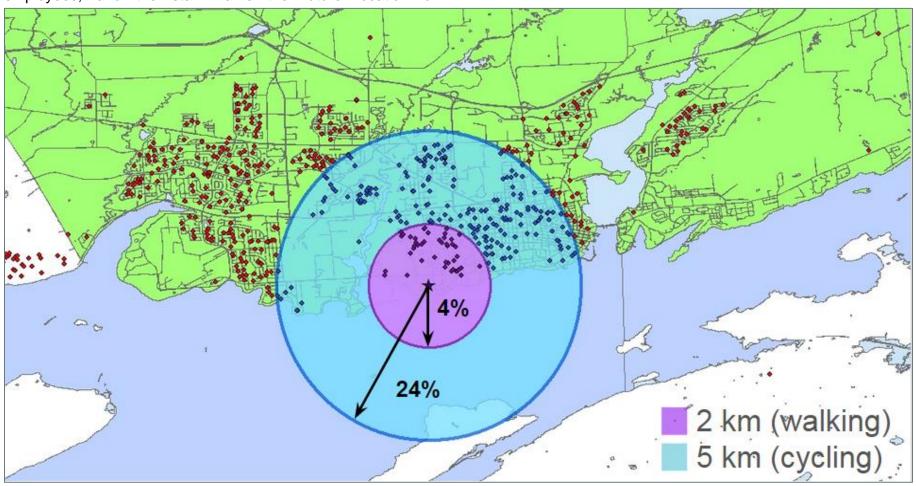


Figure 4.1: Geographic distribution of Providence Care employees in Kingston.

# 4.2 PROVIDENCE CARE EMPLOYEE COMMUTING SURVEY

A 21-question survey was distributed by email to all Providence Care employees (approximately 1700 people) in order for the team to understand the specific commuting needs of employees. Over a 25-day period, 264 people completed the survey, for a response rate of approximately 16%. This is a typical response rate for an email survey, where response rates generally fall between 10% and 20%². Although the number of responses falls below the level typically needed to draw conclusions about the target population (i.e., all Providence Care employees), the collected responses still provide a useful pool of information to draw from.

Survey questions covered a number of topics, including the personal characteristics of respondents, employee commuting patterns, commute satisfaction and willingness to try new modes, and finally the factors that would make walking, cycling, and taking transit more attractive commuting options.

#### 4.2.1 Characteristics of Survey Respondents

The majority of survey respondents were female (79%), and at least a third were between the ages of 45-54 (34%). Ninety-four percent of respondents fell between the ages of 25 and 65. Respondents were asked about their status as Providence Care employees, and 64% answered that they worked full-time, during regular business hours. Almost 20% of employees work shift-work, either as full-time, part-time or temporary/casual employees. Comments made in the survey indicated that Kingston buses do not run early or late enough to be a viable transportation option for both ends of the work commute for these types of employees.

Although Providence Care is a teaching institution and hosts placement students from Queen's University and St. Lawrence College, only one survey respondent was a placement student. This point is noted because students are less likely than employees to own a vehicle and commute by driving, and are therefore one group poised to particularly benefit from the implementation of an AST strategy<sup>3</sup>.

Respondents were asked what major Providence Care location they commute to – Mental Health Services, St. Mary's of the Lake Hospital, or Providence Manor – and if these locations did not apply, to select "other" and describe the location (see **Figure 4.2**). The largest percentage of survey respondents (43%) commute to St. Mary's of the Lake Hospital, followed by Mental Health Services (35%). This means that with the consolidation of these two hospitals, the number of employees commuting to the site of Providence Care Hospital will more than double. Some interview<sup>9</sup> and workshop participants were concerned about the effect this would have on traffic congestion and pedestrian safety in the community.

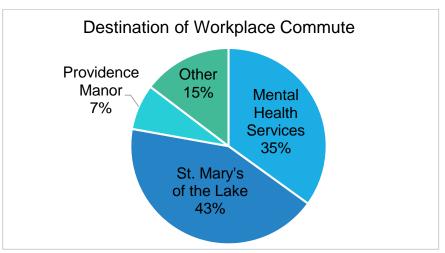
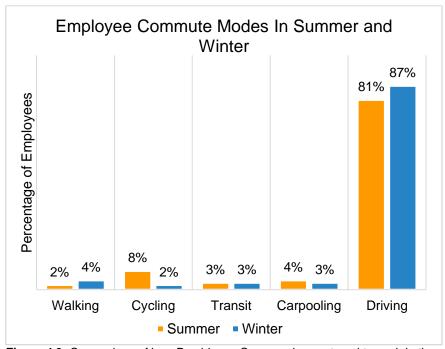


Figure 4.2: Providence Care facility that survey respondents commute to most often.

#### 4.2.2 Employee Commuting Patterns

The far majority of survey respondents drive to work, both in the summer months (81%) and winter months (87%) (see **Figure 4.3**). Winter conditions cause commuting patterns to shift, when more employees choose to drive and fewer elect to cycle. This suggests that winter conditions in Kingston are less conducive to cycling than other modes, a finding that was supported by our interviews and workshop.

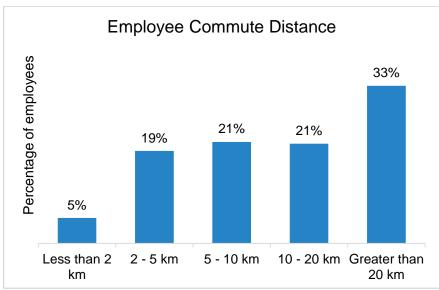


**Figure 4.3:** Comparison of how Providence Care employees travel to work in the summer and winter months.

The survey also asked how far employees live from their workplace. The majority of respondents (75%) live 5 km or farther from work, while only 5% of employees who answered the survey live within 2 km (see **Figure 4.4**). This question yielded a similar distribution pattern to that of our spatial analysis, which used employee postal code information and

Mental Health Services as a reference point (see **Figure 4.1**). Barring other barriers, approximately 5% of employees could be expected to walk to work, as 2 km is considered by researchers to be a reasonable distance for walking to work<sup>1</sup>.

There is less consensus however, on what is considered a reasonable cycling distance. Some view a more conservative figure of 5 km as a reasonable distance<sup>1</sup>, while others contend that 8 km is a better upper limit<sup>3</sup>. While we denoted 5 km as a reasonable cycling distance for our spatial analysis of employees, we recognize that this distance changes from individual to individual. Furthermore, it is noteworthy that a large number of Providence Care employees live just outside that 5 km boundary (see **Figure 4.1**), and thus, are important to consider for initiatives that aim to promote cycling to work.

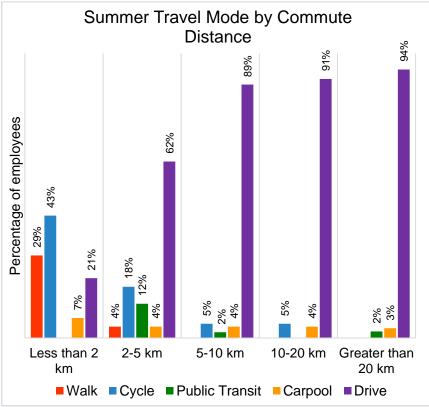


**Figure 4.4:** Distance that Providence Care employees travel from home to their primary worksite (one-way). Due to rounding the totals do not add to 100%.

Comparing the travel mode of employees with their travel distance demonstrates two commuting patterns: first, the

modes that people use to travel to work, within each distance category (see **Figure 4.5**), and second, the distance that people travel, according to mode used (see **Figure 4.6**).

When summer travel mode choice is compared to employee commute distance, driving is the most frequently used mode when distances are longer than 2 km (see **Figure 4.5**). Cycling is the most common mode for distances under 2 km, followed by walking. However, even for commutes less than 2 km, driving makes up more than a fifth of trips.

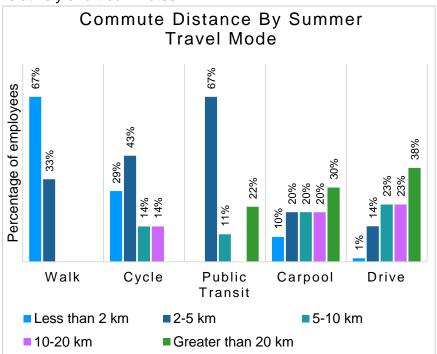


**Figure 4.5:** Travel mode of survey respondents, according to commute distance. Percentages within each commute distance category add to 100%.

When commute distance is compared to mode used, it becomes apparent that the majority of people who walk to work (67%) commute for less than 2 km one-way (see **Figure 4.6**). No survey respondents indicated that they walk more than 5 km.

While most employees who commute by cycling live 2 to 5 km from work (43%), notably 14% of cyclists travel from a distance of 10 to 20 km. Referring back to **Figure 4.5**, among employees who commute 2 to 5 km, cycling is the second most popular transportation mode, behind driving.

Carpooling is used for all commuting distances, although it appears that its use tends to increase slightly as commuting distance increases. These results indicate that carpooling should be promoted to all employees, even to people with relatively short commutes.



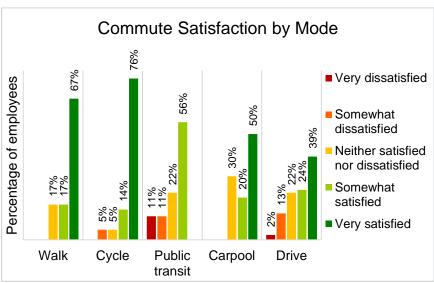
**Figure 4.6:** Commute distance of survey respondents, according to travel mode. Percentages within each travel mode category add to 100%.

#### 4 - PRIMARY RESEARCH FINDINGS

When asked how long their commute takes, the majority of survey respondents (69%) indicated they commute for less than 30 minutes each way, and more than a third (35%) commute for less than 15 minutes each way. While any employees that aren't walking, cycling, or using transit to get to work should consider carpooling, the 31% of employees who commute more 30 minutes each way are particularly good candidates for a carpool program, as the attractiveness of carpooling tends to increase with commute length<sup>4</sup>.

## **4.2.3 Commute Satisfaction and Willingness to Try New Modes**

Comparing the commute satisfaction of employees across travel modes, it becomes apparent that cyclists are most likely to be very satisfied with their commute (76%), followed by those who walk (67%) (see **Figure 4.7**). Fewer than half of drivers (39%) are very satisfied with their commute, and notably, no public transit users indicated they were very satisfied with their commute. These findings are consistent with previous research that found that active transportation users tend to enjoy their commute more than motorists and those who take public transportation<sup>5</sup>. No survey respondents who carpool indicated that they are very or somewhat dissatisfied with their commute; this result is not surprising as carpoolers are likely to leave their carpool if they are dissatisfied with it<sup>4</sup>.



**Figure 4.7**: Self-reported employee commute satisfaction, organized by mode. Percentages within each travel mode add to 100%.

These results need to be interpreted with care. For example, although most cyclists are very satisfied with their commute, it does not mean that cycling infrastructure and programs shouldn't be improved. These results are only reflective of people who already engage in these modes, and do not reflect the concerns of people who would like to engage in these modes but choose not to. For example, it is plausible that certain conditions would allow skilled cyclists to be satisfied with their commute, while it would take other conditions for less confident cyclists to be so. This is why our strategy aims to both improve AST conditions as well as increase the number of people using these modes.

The survey also aimed to determine how many employees would be willing to try new modes of commuting to work. The percentage of people who rated themselves as definitely willing or probably willing to try AST modes, if they weren't already, was as follows: carpooling (44%), taking transit (26%), cycling (18%), and walking (13%).

#### 4.2.4 Factors Influencing Commuting Patterns

We wanted to understand the various reasons that cause Providence Care employees to drive to work. We presented survey respondents who drive to work with a list of possible options for why they did so, and asked them to indicate how important each factor was, from "not at all important" to "extremely important". The five most popular factors listed as extremely important to the decision to drive were:

- I live too far from work not to drive (51%)
- Driving is faster than other modes (45%)
- Driving is more convenient and/or comfortable (44%)
- I have to make work trips during the day (19%)
- I have to make personal trips during the day (19%)

Some survey respondents left comments that elaborated on their choice to drive, a sample of which are displayed below:

"I am required to see patients in their homes - they live across the city and I am required to see them immediately if needed...I am required to have a car to do my work. I would love to walk or cycle but given the geographical distribution of patients this is not feasible".

"I need my car daily to respond to medical emergencies of family members".

"I would commute by bicycle if I was provided with a vehicle to use to complete my duties during working hours".

"Improvements to bike lanes have made the commute safer but there are still large portions of my route that do not have bike lanes. Expanding the bike lanes to encompass the whole route would improve safety and make it more likely that I would cycle to work".

These comments indicate that, although there are barriers preventing some employees from commuting by AST, not all of these barriers are insurmountable. For instance, access to Providence Care fleet vehicles would potentially allow the first and third commenters to make work trips during the day without using their own vehicle. A guaranteed ride home may provide the second commenter with the peace of mind to use AST to travel to work. Cycling infrastructure improvements may allow the last commenter to cycle to work more often.

We also wanted to know if there were incentives that would encourage people to take other modes. These factors influenced the content of our recommendations. The following incentives were rated by survey respondents as the top three most popular by mode:

#### Walking



- Better snow clearance in the winter months (41%)
- Guaranteed ride home in case of emergency (29%)
- Safer and/or more road crossings (29%)

#### Cycling



- Improved cycling lanes and pathways (39%)
- Secure and sheltered bicycle parking at work (38%)
- Better snow clearance in the winter months (38%)

#### **Transit**



- Direct transit route to and from my workplace (38%)
- Bus stop very close to main work entrance (30%)
- Guaranteed ride home in case of emergency (29%)

#### 4 - PRIMARY RESEARCH FINDINGS

#### 4.3 WORKSHOP

In early November 2014 we held a workshop in the Portsmouth community that was attended by 14 community members. The purpose of this workshop was to gain community perspectives on using AST to travel to the current Mental Health Services facility and to the future Providence Care Hospital. Because this strategy takes into account the Kingston Provincial Campus (KPC) grounds and surrounding community, participant input provided valuable feedback on collected research and guided the recommendations of this strategy.

#### 4.3.1 Barriers and Facilitators of AST

Workshop participants were asked to identify current barriers and facilitators that affect the use of AST when travelling to and from Mental Health Services and in the surrounding area. In other words, we wanted to understand the factors that participants thought made travel by AST difficult, and those that made it convenient or enjoyable. As you can see, participants tended to focus on barriers to AST, indicating that comprehensive improvements are needed before travel by AST modes is widely adopted by community members. Participant feedback is summarized in **Table 4.1**.

**Table 4.1**: Participant identified barriers and facilitators to using AST to travel to and from the site of Providence Care Hospital.

and nom the site of i	Providence Care Hospital.
Barriers	Unsafe intersections along King Street near Mental Health Services
	High traffic speeds and volume along King Street
	Insufficient lighting along sidewalks and paths serving Mental Health Services, especially along the Waterfront Trail
	Inadequate bike storage at Mental Health Services
	Long distance between transit stops to front door of Mental Health Services building
Facilitators	Pleasant scenery along the Waterfront Trail
	Potential for commercial land uses within existing buildings on KPC lands
	Opportunities for increased exercise and improved health through active travel

•

#### 4.3.2 Best Practices for AST

Participants also engaged in facilitated discussions regarding best practices for three different modes of AST: cycling, walking, and public transit. Carpooling was not included as a mode of transportation, given that the workshop was attended by community participants rather than Providence Care employees. Each group was assigned one of the three modes of travel and examined poster boards that presented examples

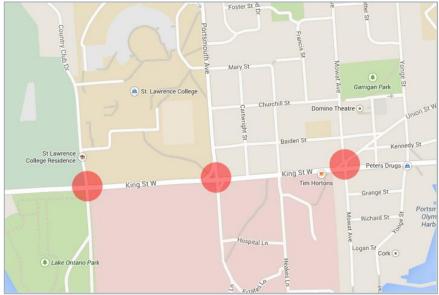
of successfully implemented AST programs and infrastructure related to that mode. The objective of this activity was to gather feedback on which practices would encourage the use of AST to and from the hospital. Participants were encouraged to offer suggestions for programs or infrastructure, beyond what was presented on the poster boards, as well as to offer recommendations that referred to other modes of AST travel. Key findings from these discussions are summarized in **Table 4.2**.

Table 4.2: Participant responses to best practices.

Walking	Cycling	Transit  Real-Time Bus Information	
Better Snow Removal	Bike Boxes		
<ul> <li>Current level of service thought to be a major barrier (inconvenient and dangerous)</li> <li>Support for City to revisit their current practices and prioritize snow clearance for sidewalks leading to the hospital</li> </ul>	Supported idea of introducing bike boxes (a painted intersection design that allows cyclists to make left turns at intersections more safely), but expressed the need for an educational campaign to accompany introduction	<ul> <li>Could take form of indoor/outdoor passenger information boards, and be integrated with transit Trip Planner and smart phone app</li> <li>Strong support for the certainty this would give transit users</li> </ul>	
Covered Walkways	End of Trip Facilities	Heated Bus Shelters	
Thought that pathway leading from King Street to the new hospital entrance could be covered to protect against inclement weather	<ul> <li>Having lockers and showers at workplaces would help make commuting by bicycle easier and more comfortable</li> </ul>	<ul> <li>Strong support for passenger-activated heating systems at bus shelters, particularly at remote locations</li> <li>Wondered if solar panels could be used to power the heaters</li> </ul>	
Heated Sidewalks	Traffic Calming Measures	More Amenities in the Area	
Liked that a heating system would eliminate ice, but concerned about effectiveness of technology during cold winters	<ul> <li>Strongly favoured by participants</li> <li>Thought that traffic calming measures (speed bumps, bumpouts, lower speed limits) should be implemented in residential areas near hospital</li> </ul>	<ul> <li>Brought up by participants</li> <li>Thought having more amenities (coffee shops, retail) near bus stops would make waiting for transit more enjoyable</li> </ul>	
Informational Plaques along Pathways	Artistic Bicycle Racks	Shuttle from Hospital to Nearby Transit	
<ul> <li>Plaques could include detailed information on the history of the site</li> <li>Thought it would make walking more enjoyable</li> </ul>	<ul> <li>Mixed feelings about this best practice</li> <li>Some felt that these types of bicycle racks could help create a welcoming environment, others perceived them as impractical</li> </ul>	<ul> <li>Hubs</li> <li>➤ Redeploy van owned by Providence Care to transport employees and/or patients to bus stops</li> <li>➤ Thought it would increase transit ridership</li> </ul>	

#### 4.3.3 Problematic Intersections

One comment repeatedly made by workshop participants was the need to modify three intersections along King Street that are close to the hospital: Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue (see **Figure 4.8**). Each group identified these intersections as unsafe for individuals engaging in AST.



**Figure 4.8:** Problematic intersections, highlighted in red, near the site of the new hospital (from left to right): Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue. The KPC is located south of King Street, and is shown in pink on the map (Adapted from Google Maps, 2014).

#### 4.4 INTERVIEWS

A total of 14 interviews were conducted with 17 participants, including planning professionals from the City of Kingston and Infrastructure Ontario, a planning consultant for the KPC, representatives of patients and staff at Providence Care, representatives from the Portsmouth District Community Association, and the Kingston Seniors Association. Interview

findings are organized by AST facilitators and barriers, current and future AST plans, and parking considerations.

#### 4.4.1 Facilitators of and Barriers to AST

The interviews provided information on factors that encourage or discourage the use of AST, and how these factors affect or can be improved by Providence Care, the KPC, surrounding areas, and the City of Kingston. A recurring challenge mentioned was the need for commuters to feel safe by providing well-connected sidewalks, cycling lanes, and crossings in good repair that are clear of snow and debris<sup>6,7</sup>. These factors, which contribute to the real and perceived safety of active transportation modes, are especially significant in the travel decisions of older adults<sup>8</sup>. Several interview participants drew attention to the intersections on King Street, namely those at Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue, which all require improvements to better facilitate AST 9, 10, 7. Some participants also noted that infrastructure upgrades are most effective when they are accompanied by educational and awareness campaigns.

# **4.4.2 Current and Future AST Infrastructure Plans for Kingston**

City of Kingston representatives have confirmed that the upcoming *Transportation Master Plan*, to be adopted in 2015, will reduce the level of service and funding for automobile transportation<sup>11, 9</sup>. Less funding will directed toward automobile infrastructure, in order to reduce expenses and shift priority to AST modes. However, reducing investment in automobile infrastructure will be problematic if not complemented with increased investment in active transportation infrastructure, transit service, and improved education on road safety for motorists, cyclists, and pedestrians<sup>11, 9</sup>.

There are some recent AST infrastructure improvements that have recently been made in Kingston. For example, cycling

lanes were implemented near the KPC on portions of Union Street, King Street, and along Portsmouth Avenue<sup>12</sup>. Additional improvements are planned for sidewalks in Portsmouth Village<sup>12</sup>. However, in several areas of Portsmouth Village, the City's engineering department is limited by the width of right-of-way available to implement such modifications<sup>9</sup>. As a result, certain improvements have higher associated costs and will take longer to implement<sup>9</sup>.

#### 4.4.3 Parking Considerations

Due to recently cut provincial funding for parking infrastructure, Providence Care Hospital will introduce a paid parking system for employees, visitors, and patients to compensate for the cost of providing and maintaining parking<sup>13</sup>. A task force, consisting of a range of departmental representatives from St. Mary's of the Lake Hospital and Mental Health Services, will determine the price of parking at the new facility and will discuss the potential for providing zero-cost incentives for other travel modes<sup>11</sup>. The task force will also consider if providing a shuttle service to the building entrance will be feasible<sup>10</sup>.

Portsmouth Village residents raised concerns that implementing paid parking at the hospital will divert employees to park on surrounding residential streets, where it is currently free to park<sup>7</sup>. However, City staff commented that a permit-parking system will be implemented for the surrounding area in tandem with paid parking at the new hospital <sup>14</sup>. The permit-parking system will be similar to the one currently used near Queen's University and Kingston General Hospital.

Introducing paid parking at the hospital will also pose a challenge for regulating parking at Lake Ontario Park and the Provincial Ministry offices on the KPC<sup>15</sup>. Parking at the Ministry offices is currently free and not regulated; however, a permit system will likely need to be implemented so these parking spaces are reserved for Ministry employees only. Additionally,

although it is hoped that the construction of the new hospital will increase pedestrian connectivity to Lake Ontario Park, this connection will likely increase the chance of hospital employees taking advantage of the free parking at the park<sup>16</sup>. With the exception of MacDonald Park, the City provides parking at parks for free, but there are similar challenges with commuters parking at City Park and MacDonald Park, which are adjacent to Queen's University and Kingston General Hospital<sup>16</sup>.

#### 4.5 KEY CHALLENGES FOR THE STRATEGY

Encouraging the use of AST to Providence Care Hospital involves three key challenges that were identified through our research. These issues require attention and careful thought as they represent crucial factors for the success of the strategy. The three challenges, which will be discussed in detail, are:

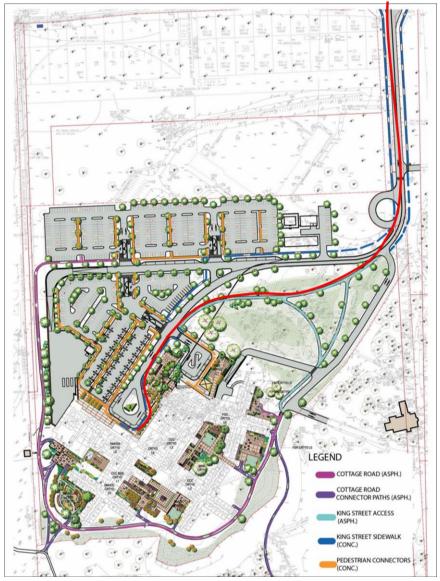
- 1. Distance from hospital entrance to transit service. The pathway that will connect Providence Care Hospital to the nearest transit stop is 740 meters long. This distance is inconvenient, especially for those facing mobility challenges.
- **2. Implications of introducing paid parking**. The future paid parking system at the hospital presents an opportunity to promote AST. However, Providence Care needs to consider surrounding land uses and fair pricing when planning this system.
- **3.** Required intersection improvements along King Street. King Street is the main commuter route for people to access the KPC. Three intersections along King Street have been identified as hazardous for pedestrians and cyclists: Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue (see **Figure 4.8**).

# **4.5.1 Distance from Hospital Entrance to Transit Service**

The design of Providence Care Hospital will allow patients and visitors to enjoy therapeutic views of Lake Ontario. This was accomplished by locating the facility closer to the water than the current Mental Health Services building. However, this relocation increases the distance between the facility and the nearest transit stop on King Street. The planned pathway to connect these two locations will be approximately 740 m long<sup>14</sup>, a distance two to three times what most transit users are willing to travel <sup>17,18</sup>. This distance will be a significant barrier in promoting AST, as the planned pathway will serve as the major access route to the hospital for pedestrians and transit users (see **Figure 4.9**).

For users with mobility challenges, this long distance will be difficult or impossible to navigate if the pathway lacks appropriate accommodation. The long pathway could deter individuals of any walking ability from travelling to the transit stop, particularly in rainy, cold, or icy conditions. Regardless of whether pathways are regularly cleared of snow, the chance of encountering an uncleared pathway can deter many people from walking significant distances<sup>19</sup>.

Because of the hospital setback, multiple stakeholders, including interview, survey, and workshop participants, have identified the importance of providing transit service directly to the front door of the hospital. There are a variety of access buses provided by community and health organizations to address this challenge, but some stakeholders felt that these buses cannot always be depended on, booking must be done many days in advance, and service may be only available to certain populations<sup>8</sup>.



**Figure 4.9:** The planned 740 m pathway (in red) that will run from King Street, the location of the nearest transit stop, to the front entrance of the hospital.

The need to accommodate bus and van drop-offs at the hospital front door was recognized by Providence Care, and access to the hospital was designed for bus-sized vehicles<sup>15</sup>. For example, the area directly in front of the hospital entrance doors was designed purposively to allow for a bus to load and offload hospital users without impediment (see **Figure 4.10**).



**Figure 4.10**: A rendering of the main entrance of the new hospital (Providence Care, 2013).

However, at this time Kingston does not have plans to connect any existing transit routes to the front doors of the hospital <sup>14</sup>. The transit route system is designed to run on larger, more accessible arterial roads, and it cannot accommodate the 14 minute delay that redirecting a transit route to the hospital front door would require <sup>1</sup>. From a service perspective, redirecting a route would not benefit enough transit users to warrant the added trip time. However, future planned infill development near the hospital will increase density and the number of potential transit users near the site, and so the possibility of extending a transit route into the site may be revisited and reevaluated <sup>10</sup>. During the interim period, there needs to be a better connection from King Street to the hospital, and our strategy suggests several recommendations to achieve this in Chapter 10.

#### 4.5.2 Implications of Introducing Paid Parking

Providence Care Hospital will introduce paid parking once the new parking infrastructure is built. The new lot will contain 600 parking spaces, with 400 spaces designated for employees and 200 spaces designated for outpatients and visitors 13. Since Providence Care employees, patients, and visitors previously paid either a nominal fee or no fee at all, introducing paid parking at the hospital will require careful consideration of parking system design, price, parking availability nearby, and implementing a system that is fair. A number of Providence Care employees are required to travel to and from various Providence Care facilities, and so a parking strategy will also need to adopted at all facilities, not just the hospital 20.

#### **Parking System**

The paid parking system, both in the design of the payment system and in the number of spots provided, may offer opportunities to promote AST. Parking payments at Providence Care Hospital will be made electronically, which provides an opportunity to promote AST by charging only for days parked. Requiring employees to purchase monthly or yearly passes, on the other hand, discourages employees from occasionally or sometimes using AST instead of driving alone, as the unused portion of a parking pass represents a financial penalty. Survey comments indicated that people are interested in taking AST, but some would only be able to do so a few times a week due to incompatible commitments. Providing a flexible parking pass removes the disincentive for these employees to try AST.

Currently the number of spots proposed for the hospital lot exceeds the minimum number of spots required by the City of Kingston<sup>14</sup>. Excess spaces may become available if incentives to take AST and disincentives to drive encourage a number of employees to use AST instead of drive solo. However, there

are opportunities to generate revenue with these excess parking spaces for other means, such as renting them to outside users like St. Lawrence College students or employees.

#### **Price of Parking**

The price of parking is an important determinant for travel behaviour in general<sup>21</sup> and, based on our survey findings, it is a critical determinant of employees' decisions to drive to work. As such, there is currently an opportunity to explore options that provide an economic incentive to use AST to commute to the new hospital. Pricing of parking should consider on-site demand, market rates, and the cost of a transit pass. Some survey respondents, particularly those who live far from the hospital, voiced their concern about having to pay for parking. Offering feasible alternatives to driving, such as a subsidized transit pass or well-designed carpooling program, may improve employee acceptance of the new parking rate.

#### Parking Availability in Surrounding Areas

Many land uses that are near to the new hospital site provide parking for free or at a nominal rate. Introducing paid parking at the new facility will inevitably impact parking supply in surrounding areas, and therefore the hospital parking system needs to consider the cost of parking at these locations. Free parking is available along nearby residential streets, as well as at employment offices on the KPC, including the Beechgrove Complex and Ministry of Ontario offices. The City of Kingston is aware of the planned parking strategy for the new hospital and is prepared to implement restrictions on parking in surrounding residential areas<sup>14</sup>. While there are currently no firm plans for a parking strategy at Lake Ontario Park, where parking is currently free, the City will consider addressing this as the new hospital redevelopment moves forward<sup>10</sup>.

#### A Fair Parking Strategy

Introducing paid parking requires balancing the interests of all stakeholders. Recent changes to hospital funding policies by the Province mean that parking and retail are the main sources of revenue for hospitals<sup>13</sup>. Therefore, parking prices and usage of the parking spaces are critical to the financial well-being of the hospital. However, stakeholders have expressed concerns that the cost of parking at hospitals is a financial strain for patients and their families, who often have to park on a multiday basis depending on patient treatment 22. Furthermore, having patients and their visitors pay for parking imposes an external cost to health care, causing stress and financial burden, which the Canadian Medical Association Journal recently declared in an editorial is incompatible with Canadian health care<sup>23</sup>. Therefore, a challenge lies in considering the financial burden that parking imposes on certain individuals versus the financial needs of the hospital.

The hospital will provide separate parking areas for employees and visitors/patients, making it easier to charge the two groups different rates, which facilitates tailoring the parking strategy to different stakeholders. Employees will park in a different area of the parking lot than visitors and patients, and will have to electronically scan their parking pass to enter<sup>13</sup>. Meanwhile, visitors and patients of the hospital will be charged an hourly rate, and will be able to pay in the parking lot or at the hospital front desk.

# **4.5.3 Required Intersection Improvements along King Street**

King Street is an arterial road and a major commuting corridor in Kingston. Intersections along this street are currently designed to maintain efficient vehicle flow as much as possible, but some design aspects are unnecessary barriers for AST.

#### **King Street & Country Club Drive**

This intersection (see **Figure 4.11**) currently provides access to Lake Ontario Park (to the south) and may, in preparation for further development, later be connected to a new east-west road on KPC. Country Club Drive also provides access to residential neighbourhoods and the Cataraqui Golf and Country Club (to the north). Workshop participants perceived this intersection as unsafe due to speeding motorists and a lack of traffic signals. Without signals to create a break in vehicle traffic, crossing King Street can involve significant delays and risks for pedestrians and cyclists. The only assistance currently afforded to pedestrians crossing the five-lane road is a warning sign for motorists (see **Figure 4.12**). This intersection is 400 metres away from the closest signalized intersection, a distance that people are unlikely to travel to cross the road.



**Figure 4.12**: King Street and Country Club Drive (facing west). A sign near the bus stop (highlighted by the red box) indicates that pedestrians may try to cross the unsignalized intersection (Newton, 2014).



Figure 4.11: Overhead view of King Street and Country Club Drive (Adapted from City of Kingston KMaps, 2013).

#### King Street & Portsmouth Avenue

Improving this intersection (see **Figure 4.13**) is paramount as it provides motor vehicle access to MHS and the future hospital. Site visits determined that the southbound right-turn channel on Portsmouth Avenue becomes dangerous for cyclists who want to continue straight through the intersection but are cut off by motorists making right turns (see **Figure 4.14**). Here, the lack of markings extending from the designated bike lanes on Portsmouth Avenue makes going straight through the intersection inherently dangerous, even for experienced cyclists. Furthermore, this right-turn channel does not have adequate road markings or signage that signals vehicles need to yield to pedestrians who have right-of-way at this location.



**Figure 4.13**: Overhead view of King Street and Portsmouth Avenue (Adapted from City of Kingston KMaps, 2013).



**Figure 4.14**: Portsmouth Avenue, facing south towards King Street. The bike lane on the right abruptly ends and becomes a right turn channel for motorists. This poses a challenge for cyclists attempting to travel south (Newton, 2014).



**Figure 4.15**: The transit shelter at King Street and Portsmouth Avenue, located at the end of the off-road cycling lane (Tan, 2014).

Concern was also raised around the design and location of the transit shelter on the southwest corner of the intersection<sup>7</sup>. The shelter stands where an off-road cycling lanes ends without warning, and features a transit sign that cyclists could strike (see **Figure 4.15**).

#### King Street, Union Street & Mowat Avenue

The unique configuration of the five-way intersection between King Street, Mowat Avenue, and Union Street creates a bottleneck as a result of high traffic volumes and the narrow right-of-way available (see **Figure 4.16**). The configuration of this intersection presents particular challenges for both pedestrians and cyclists to navigate. The narrow right-of-ways leave little room for cyclists travelling through the intersection and drivers are not made aware they need to yield to cyclists by any signage. Additionally, the absence of a pedestrian crossing on Union Street, immediately north of the intersection, causes pedestrians to choose between a significant delay or crossing dangerously.



**Figure 4.16**: Overhead view of King Street, Union Street, and Mowat Avenue (Adapted from City of Kingston KMaps, 2013).

#### 4.6 REVIEW OF PRIMARY RESEARCH FINDINGS

- AST strategies must offer comprehensive recommendations. Individuals have different needs and wants, and sometimes a variety of factors must change before an individual will be able to engage in AST.
- Multiple and diverse stakeholders will be affected by, and serve to gain from, the implementation of this strategy.
   Putting the strategy into action will require collaboration between multiple actors.
- Implementing some recommendations will be simple and inexpensive, such as painting bike lanes on wide roadways, while other recommendations, such as extensive intersection improvements, are more complex and costly.
- Active transportation is not feasible for everyone, and therefore public transit and carpooling are necessary alternatives.

<sup>&</sup>lt;sup>1</sup> Larsen, J., El-Geneidy, A., & Yasmin, F. (2010). Beyond the quarter mile: Re-examining travel distances by active transportation. *Canadian Journal of Urban Research*, 19(1), 70-88.

Nulty, D. (2008). The adequacy of response rates to online and paper surveys: What can be done? Assessment & Evaluation in Higher Education, 33(3), 301-314. doi:10.1080/02602930701293231

<sup>&</sup>lt;sup>3</sup> Shannon, T., Giles-Corti, B., Pikora, T., Bulsara, M., Shilton, T., & Bull, F. (2006). Active commuting in a university setting: Assessing commuting habits and potential for modal change. *Transport Policy*, 13(3), 240-253. doi:10.1016/j.tranpol.2005.11.002

<sup>&</sup>lt;sup>4</sup> Teal, R. F. (1987). Carpooling: Who, how and why. *Transportation Research Part A: General*, 21(3), 203-214. doi:10.1016/0191-2607(87)90014-8

<sup>&</sup>lt;sup>5</sup> Páez, A., & Whalen, K. (2010). Enjoyment of commute: A comparison of different transportation modes. *Transportation Research Part A*, 44(7), 537-549. doi:10.1016/j.tra.2010.04.003

<sup>&</sup>lt;sup>6</sup> Planning consultant, personal interview, October 28, 2014.

<sup>&</sup>lt;sup>7</sup> Portsmouth District Community Association representatives, personal interview, October 21, 2014.

- 8 Seniors Association Kingston Region representative, personal interview, October, 24, 2014.
- <sup>9</sup> City of Kingston representative, personal interview, October 10, 2014.
- 10 City of Kingston representatives, email correspondence, October 20, 2014.
- <sup>11</sup> City of Kingston representative, personal interview, October 9, 2014.
- <sup>12</sup> City of Kingston representative, telephone interview, November 6, 2014.
- <sup>13</sup> Providence Care representative, personal interview, November 3, 2014.
- <sup>14</sup> City of Kingston representatives, personal interview, October 7, 2014.
- <sup>15</sup> Providence Care representative, personal interview, October 14, 2014.
- <sup>16</sup> City of Kingston representative, personal interview, October 17, 2014.
- <sup>17</sup> Planning consultant, telephone interview, October 28, 2014.
- <sup>18</sup> Hess, D. B. (2012). Walking to the bus: Perceived versus actual walking distance to bus stops for older adults. *Transportation*, 39(2), 247-266. doi:10.1007/s11116-011-9341-1
- <sup>19</sup> Lockett, D., Willis, A., & Edwards, N. (2005). Through seniors' eyes: An exploratory qualitative study to identify environmental barriers to and facilitators of walking. *CJNR (Canadian Journal of Nursing Research)*, 37(3), 48-65.
- <sup>20</sup> Providence Care representative, telephone interview, November 12, 2014.
- <sup>21</sup> Meyer, M. D. (1999). Demand management as an element of transportation policy: Using carrots and sticks to influence travel behavior. *Transportation Research Part A*, 33(7), 575-599. doi:10.1016/S0965-8564(99)00008-7
- Noor, J. (2013, June 28). Hospital parking fees in GTA spark grassroots campaign. *The Star*. Retrieved October 20, 2014 from http://www.thestar.com/news/insight/2013/06/28/hospital\_parking\_fees\_in\_gta\_spark\_grassroots\_campaign.html
- <sup>23</sup> Kale, R. (2012). Parking-centred health care. *CMAJ: Canadian Medical Association Journal*, *184*(1), 11-11. doi:10.1503/cmaj.111846.

# 5

# GENERAL RECOMMENDATIONS

5.1 GENERAL RECOMMENDATIONS FOR PROVIDENCE CARE6	7
G-1. ALLOW EMPLOYEES TO WORK FLEXIBLE HOURS6 G-2. CREATE AN INFORMATION PORTAL DEDICATED TO AST ON	7
THE PROVIDENCE CARE WEBSITE6	7
G-3. PROVIDE AWARDS AND FINANCIAL INCENTIVES6	8
G-4. Provide a Guaranteed Ride Home Program for	
PROVIDENCE CARE EMPLOYEES6	8
G-5. Develop a Providence Care Sustainability Policy 6	9
5.2 GENERAL RECOMMENDATIONS FOR THE CITY OF KINGSTON 6	9
G-6. UPDATE AND ENHANCE AST INFORMATION ON THE CITY WEBSITE	9
5.3 COLLABORATIVE GENERAL RECOMMENDATIONS	_
G-7. Provide Wayfinding Markers near and on the KPC6 G-8. Maintain Existing AST Infrastructure to High	9
STANDARDS	0
G-9. CREATE A TRANSPORTATION MANAGEMENT ASSOCIATION (TMA)	1

Recommendations in this report are organized by mode into five chapters: general, walking, cycling, transit, and carpooling. General recommendations are those that do not apply solely to one mode, but will improve AST conditions overall.

# 5.1 GENERAL RECOMMENDATIONS FOR PROVIDENCE CARE

The following are general recommendations that may be implemented by Providence Care to promote the use of AST.

#### G-1. Allow Employees to Work Flexible Hours

Where feasible, Providence Care should implement flexible hour (flextime) policies so that employees who wish to use AST modes to commute to work have flexible start and finish times. Flextime employer policies allow employees to engage in physical activity in addition to completing their required number of work hours per day, while reducing the need for single occupancy vehicles and increasing the chance of using AST¹. Flexible hours also allow employees to meet commitments that require a car or more time, such as dropping a child off at daycare followed by commuting using AST.

Our workshop and survey findings indicated that people would be more willing to engage in AST to commute to and from work if they were provided more flexibility in their start and finish times.

# G-2. Create an Information Portal Dedicated to AST on the Providence Care Website

Websites, also known as information portals, are great tools for disseminating information to potential users of AST modes. To complement the city's efforts to promote AST, **Providence Care should create a comprehensive AST section on their** 

**website**. This information portal should provide information regarding transportation options and services to and from the facility.

An effective website would provide employees, patients, and visitors with public transit information, including accessible bus stop information and links to the City of Kingston's Trip Planner. In addition, the site should include walking and cycling routes, the location of secure bike storage services, and information on access to end-of-trip facilities. Providence Care should also highlight the benefits of AST, any financial incentives offered by the organization, and AST clubs or challenges that the organization is involved in. This context specific information is valuable and difficult to provide only on municipal sites.

This online tool could be modelled similarly to the University of Guelph's Campus Sustainability – Transportation page. The University of Guelph profiles different modal options, and provides individual site links for each mode that offer information regarding its economic and environmental benefit². Additionally, Mount Royal University in Calgary provides information regarding AST on their university website, and also provides links to the City of Calgary's website which provides further information on walking, cycling, and transit use.

#### G-3. Provide Awards and Financial Incentives

Providence Care should provide awards and financial incentives to encourage employees to commute using AST. Awards and financial incentives are powerful tools that employers and larger organizations can implement to encourage more people to use AST, and to increase awareness of these modes.

Awards given to employees could be as simple as recognition for efforts, which are advertised in the weekly newsletter or presented at organized work lunches, or financial awards for participation in AST. These incentives can act as behaviour change strategies for employees, who may be willing to try an alternative mode, even once or twice per week to start, and be recognized for the effort. For example, the City of Vancouver has an active transportation incentive program whereby employees gain points for using active transportation modes, which can be converted into monetary gifts such as transit passes or gift certificates for stores that sell walking and cycling equipment<sup>3</sup>.

By participating in the promotion of AST, Providence Care could be recognized for their efforts by the larger active transportation community. For example, Green Action Centre in Manitoba provides employers who promote AST with workplace awards for their efforts. Recognition of these efforts provides employers with the incentive to encourage employees to commute using alternative modes of transportation. These incentives include increasing the overall well-being of employees, decreasing the institution's ecological footprint, and gaining a positive corporate image<sup>4</sup>.

# G-4. Provide a Guaranteed Ride Home Program for Providence Care employees

Providence Care should implement a guaranteed ride home program for employees who choose to use AST in case of emergencies. A guaranteed ride home program was supported by findings from case studies, the survey, the community workshop, and interviews with Providence Care representatives. Guaranteed ride home programs provide individuals who walk, cycle, take transit, or carpool to work with a guaranteed ride in case of an emergency, such as illness. These programs commonly provide taxi fare, and sometimes the use of a rental or company vehicle. By providing employees with a safe and reliable emergency option, this program could

encourage AST amongst commuters who are currently concerned about leaving their vehicle at home.

#### G-5. Develop a Providence Care Sustainability Policy

Providence Care Hospital will incorporate sustainable design elements and is expected to attain LEED Silver Certification. The construction of this facility provides Providence Care with an opportunity to develop an institution-wide sustainability policy and demonstrate a continued commitment to sustainability. Encouraging the use of active and sustainable modes should be a priority objective within this sustainability policy. Creating overarching policies that reduce the negative impacts associated with driving and that are in line with both provincial and municipal sustainability objectives is paramount. Providence Care should create an AST committee to establish and monitor AST programs and to disseminate information and resources to other employees.

# **5.2 GENERAL RECOMMENDATIONS FOR THE CITY OF KINGSTON**

The following are general recommendations that may be implemented by the City of Kingston to promote AST.

# G-6. Update and Enhance AST Information on the City Website

Information portals created in broader contexts such as municipal and provincial government websites are powerful tools for promoting AST. The City of Kingston should create an easily accessible section related to AST on their website's homepage which can be used by residents and visitors alike. Information regarding AST is currently available on the City's website; however it is cycling intensive and difficult to navigate. The City is currently in the process of creating an online map to highlight Kingston's cycling routes and facilities<sup>5</sup>.

A good example of a municipal website is from the City of Barrie, which offers comprehensive online information on active transportation to residents, and provides several "Helpful Links" to other websites that provide additional information<sup>6</sup>.

#### 5.3 COLLABORATIVE GENERAL RECOMMENDATIONS

The following are general recommendations that involve a number of stakeholders and need to be implemented collaboratively.

#### G-7. Provide Wayfinding Markers near and on the KPC

The City of Kingston should develop and implement citywide wayfinding guidelines for pedestrians, cyclists, and motorists. Wayfinding allows people to orient themselves in an environment and navigate from place to place<sup>7</sup>. Well-designed and strategically placed maps and signs make wayfinding easier for both recreational and commuter travellers<sup>8</sup>. Our site analysis, interviews, and workshop findings revealed that existing wayfinding infrastructure surrounding the KPC and the current facility is severely limited, posing a barrier for those wanting to travel by foot or bicycle and who may be unfamiliar with commuting corridors and path networks.

Additionally, the City wayfinding policy should include provisions for non-municipally owned land, such as the KPC owned by Infrastructure Ontario, to incorporate similar signage within their lands as an extension of the municipal wayfinding infrastructure. Ideally all wayfinding signage should be consistent, or it may be confusing or easily overlooked by individuals (see **Figure 5.1**).



**Figure 5.1**: Mismatched cycling wayfinding signs in Kinston. The one on the left is from the corner of King Street and Portsmouth, while the one on the right is in the Portsmouth neighbourhood (Newton, 2014).

Wayfinding guidelines can be incorporated into overarching municipal or regional strategies. For example, TransLink, the regional transportation authority for Metro Vancouver, has created the resource *Get There by Bike! Wayfinding Guidelines for Utility Cycling in Metro Vancouver*, as part of their greater regional cycling strategy, which directs planners and consultants to establish appropriate signage for cyclist commuters<sup>9</sup>.

# G-8. Maintain Existing AST Infrastructure to High Standards

The City of Kingston should maintain AST infrastructure, including sidewalks, pathways, bike lanes, and transit stops to a high standard. Kingston is in a geographic location which brings snow and ice during winter months (see Figure 5.2). These weather elements can negatively affect roadways and cycling and pedestrian infrastructure by creating cracks in roads and potholes. Additionally, leaves that fall off trees in the autumn as well as sand and gravel get packed into bike lanes and drainage grates by snowplows. Interview and workshop participants expressed concern that this makes for unsafe

cycling infrastructure in the spring months when the snow has melted, and before debris is removed<sup>10</sup>.



Figure 5.2: One of Kingston's few separated cycling lanes (east of Lake Ontario Park, south of King Street), along a key route to access the hospital, is left unusable due to snow buildup (Newton, 2014).

It has been determined that the bike path on the south side of King Street, specifically towards the west as becomes Front Road, dangerous in many spots and very poorly paved. Additionally, cyclists using the bike lane along this street have to swerve to miss a transit shelter sign that has been placed in line with the bike lane (refer back to Figure 4.15). Although the City is aware of these problems, redevelopment of these bike lanes is not currently planned; however very poor spots can be reported to the City<sup>5</sup>. The City needs to grade and repave

this bike path so it becomes a safe piece of infrastructure for cyclists to use, particularly given the lack of cycling lanes along King Street.

While it is the responsibility of the City of Kingston to maintain municipal roadways and bike lanes within the City, it is the responsibility of Providence Care and Infrastructure Ontario to maintain their respective areas within the KPC. Maintenance within these areas is twofold. One, during winter, snow and ice need to be removed from roadways, sidewalks, and bike lanes. In the spring, gravel, leaves, and debris left behind by winter, need to be swept away regularly within the few first weeks of

the season<sup>11</sup>. Two, sidewalks, bike lanes, and roadways need to be maintained in terms of the quality of their infrastructure, such as fixing cracks in the pavement and potholes.

# **G-9.** Create a Transportation Management Association (TMA)

There are several organizations in Canada that seek to promote the use of AST for commuting to work through programming options. One such option is a transportation management association (TMA), which is defined as a "non-profit, member-controlled organization that provide[s] a range of transportation services within a specific area, such as an area of a community or a commercial district"<sup>11</sup>. The development of a TMA within a Kingston organization could be established to promote AST within the community.

An example of a well-established TMA in Canada is Smart Commute: A Program of Metrolinx, which offers a variety of services to employers, including surveys to understand employee commuting behaviours, AST action plans, and tools to get employees to change to active modes<sup>11,12</sup>. An alternative program, Operation Bike-to-Work, a subsection of Vélo Québec, is an active transportation initiative that promotes cycling to work by providing information to employers on how to facilitate such actions<sup>4</sup>. Interview and workshop findings during the development of this AST strategy support the concept of a TMA.

The development of a TMA in Kingston would be a community effort, where several employers could become members. An existing non-profit organization, such as Kingston Coalition for Active Transportation (KCAT) could champion such an initiative, or extend their mandate to offer services to Kingston employers that want to increase the use of AST to and from their workplace. The City, along with community organizations such as the Portsmouth District Community Association, the

KFL&A Public Health, and other institutions such as St. Lawrence College and Queen's University can all contribute resources to a TMA created in Kingston in the form of knowledge, volunteers, and finances. Providence Care could then aim to become a party within the development of this program.

<sup>&</sup>lt;sup>1</sup> Centers for Disease Control and Prevention [CDC]. (2013). Workplace health promotion. Retrieved November 16, 2014 from http://www.cdc.gov/workplacehealthpromotion/implementation/topics/physical-activity.html

<sup>&</sup>lt;sup>2</sup> University of Guelph. (2014). Campus Sustainability - Transportation. Retrieved November 13, 2014, from https://www.uoguelph.ca/sustainability/transportation

<sup>&</sup>lt;sup>3</sup> City of Vancouver representative, telephone interview, May 2013.

<sup>&</sup>lt;sup>4</sup> Vélo Québec. (n.d.). Operation bike-to-work. Retrieved October 8, 2014 from http://www.velo.qc.ca/active-transportation/Operation-bike-towork/

<sup>&</sup>lt;sup>5</sup> City of Kingston representative, telephone interview, November 6, 2014.

<sup>&</sup>lt;sup>6</sup> The City of Barrie. (n.d.). Active transportation. Retrieved November 16, 2014 from http://www.barrie.ca/Living/Getting%20Around/ Pages/ActiveTransportation.aspx

<sup>&</sup>lt;sup>7</sup> Xia, J., Arrowsmith, C., Jackson, M., & Cartwright, W. (2008). The wayfinding process relationships between decision-making and landmark utility. *Tourism Management*, 29(3), 445-457. doi:10.1016/j.tourman.2007.05.010

<sup>&</sup>lt;sup>8</sup> Lamont, M., & Causley, K. (2010). Guiding the way: Exploring cycle tourists' needs and preferences for cycling route maps and signage. Annals of Leisure Research, 13(3), 497-522. doi:10.1080/11745398.2010.9686860

<sup>&</sup>lt;sup>9</sup> TransLink. (2014). Bicycle wayfinding guidelines. Retrieved November 23, 2014 from http://www.translink.ca/en/GettingAround/ Cycling/Bicycle Wayfinding-Guidelines.aspx

<sup>&</sup>lt;sup>10</sup> Portsmouth District Community Association representatives, personal interview, October 21, 2014.

<sup>11</sup> Transport Canada. (2007). Urban transportation showcase program: Amenities and programs that encourage active transportation in all seasons. Retrieved October 23, 2014 from http://www.tc.gc.ca/ media/documents/programs/cs53e\_ allseason.pdf

<sup>&</sup>lt;sup>12</sup> Metrolinx. (n.d.). Smart Commute: A program of Metrolinx. Retrieved November 15, 2014 from http://www.smartcommute.ca/

# WALKING RECOMMENDATIONS

6.1	WALKING RECOMMENDATIONS FOR PROVIDENCE CARE73
6.2	W-1. CREATE AN ACTIVE TRANSPORTATION COMMITTEE TO PROMOTE WALKING
6.3	W-2. PRIORITIZE SIDEWALK CLEARANCE NEAR HEALTHCARE FACILITIES
	W-6. IMPROVE THE QUALITY OF WALKING PATHS AT KPC AND IN THE SURROUNDING AREA

# 6.1 WALKING RECOMMENDATIONS FOR PROVIDENCE CARE

The following recommendation may be implemented by Providence Care to promote walking to the current and future facility.

# W-1. Create an Active Transportation Committee to Promote Walking

The creation of an Active Transportation Committee at Providence Care to disseminate resources to other employees may help to promote walking to and from the workplace. This type of committee would provide resources such as walking guides and route information to employees and could even help to coordinate commuting initiatives, such as a walking buddy-program<sup>1</sup>. A "lunch and learn" session or a weekend clinic at Providence Care Hospital could be held to teach employees about appropriate winter travelling practices for pedestrians. For instance, "Running Room Ltd" is a Canadian company which gives clinics on walking and running in winter weather, covering information such as what type of clothing and shoes to wear in cold and wet weather<sup>1</sup>.

# **6.2 WALKING RECOMMENDATIONS FOR THE CITY OF KINGSTON**

The following provides a list of recommendations which should be considered by the City of Kingston to help improve the pedestrian environment surrounding the Providence Care Hospital.

# W-2. Prioritize Sidewalk Clearance near Healthcare Facilities

Interview, workshop, and survey participants all identified the need for better snow clearance on the sidewalks along

King Street and in the Portsmouth community. Participants felt that snow clearance needed to be completed sooner after a snowfall, and done in a way that removes ice. During the winter months in Kingston, the ability of pedestrians to easily and safely use sidewalks is often threatened by the heavy snow and ice that accumulates on sidewalk surfaces (see Figure 6.1). Navigating over and around the fallen snow is both difficult and dangerous when the sidewalks are not well cleared, and this is a concern for individuals of all ages and mobility levels. According to Kingston's Winter Control Plan, sidewalks/walkways are classified by the level of foot traffic they receive and their proximity to streets with heavy traffic2. This classification system is then used to determine how to prioritize level of snow clearance given sidewalks/walkways in different areas. Although the City of Kingston has an existing snow clearance plan for sidewalks, it was voiced by participants that sidewalk clearance remains inadequate around the current Providence Care facility.

The City of Kingston is responsible for ensuring that all sidewalks are cleared to the same level and standard once clearing occurs, as there is no by-law in place requiring homeowners to remove the snow and ice from the part of the sidewalk fronting their property. Since homeowners are not required to participate in snow clearance, this leaves sidewalks in poor walking conditions, especially after a large snowfall, as pedestrians must wait for the City's services. The City of Kingston should improve current sidewalk clearance policies to prioritize sidewalks in areas where there may be higher numbers of people with mobility challenges, such as near healthcare facilities like Providence Care Hospital. This type of service improvement would ensure walking remains as a reliable and safe travel option for patients travelling to the hospital during the winter months, as these sidewalks would be cleared in a timely manner. Although this

policy change is catered to individuals with mobility challenges, it would also benefit staff members travelling to the site. This is in alignment with our survey results which found that better snow clearance during the winter months would be an important factor for encouraging walking among Providence Care employees.



**Figure 6.1:** An icy sidewalk on a steep section of Union Street, looking west from Gardiner Street (Newton, 2014).

# W-3. Widen Sidewalks near the Kingston Provincial Campus (KPC)

Sidewalks are an integral part of the pedestrian environment and their quality can greatly influence whether or not an individual feels comfortable walking. When sidewalks are too narrow it becomes challenging for high volumes of people to travel along them, especially individuals with mobility issues as they may feel crowded and unsafe. This also detracts from using sidewalks as a means of socializing with others since it can become difficult for individuals to walk side-by-side.

Widening sidewalks can help to improve the pedestrian realm and attract more people to the street. For instance Schlossberg and colleagues discussed how widening sidewalks helped to emphasize "people over cars" on Clematis Street in Downtown West Palm Beach and, subsequently, attracted many more families, shoppers and tourists to the area <sup>3</sup>. Although the context of Clematis Street is different from the streets surrounding Providence Care Hospital, it still serves as an example to illustrate how important investing in the pedestrian realm is in order to promote walking.

Although participants indicated that sidewalks need to be widened along King Street, Portsmouth Avenue, and Johnson Street, individuals felt that this improvement was most important for King Street. High volumes of automobile traffic on King Street right along the KPC grounds act as a barrier to walking and therefore, sidewalk widening would help users of different ages and mobility levels feel comfortable and safe while walking. In an interview with a City of Kingston representative, it was mentioned that the City has plans to conduct sidewalk repairs on Portsmouth Avenue over the next four years<sup>4</sup>. Our findings indicate that sidewalk enhancements should also be conducted on several other of the surrounding streets.

# W-4. Improve Existing, and Provide More, Signalized Pedestrian Crossings along King Street

This suggestion relates to the key challenge of improving intersections along King Street, and will be outlined in further detail in Chapter 10, with additional suggestions linked to other modes of active travel, such as the need for bike boxes along King Street for cyclists. In terms of walking, pedestrian crossings are important since they provide safe linkages across roadways and are essential to the connectivity of pedestrian networks. Under the Ontario Highway Traffic Act, however, pedestrians do not have the right of way at crossings that lack vehicular traffic control (i.e., a stop sign or a traffic signal)<sup>5</sup>. Since installing signalized intersections is expensive, the City of Kingston needs to be judicious about where it installs these types of crossings. For instance, at the intersection of Portsmouth Avenue and King Street, improvements could be made in the form of better pedestrian markings. However, at the intersection of Country Club Drive and King Street, a signalized intersection is required, given the volumes of people that use Lake Ontario Park and high speed of motorists along this roadway. The signal pattern and system should be consistent with other pedestrian signals throughout the rest of Kingston. The lack of safe places for pedestrians to cross King Street near Providence Care suggests that this site should be a high priority for such signalized crossings, since their absence likely deters individuals from engaging in AST to and from the site.

#### W-5. Provide More Courtesy Pedestrian Crossings

As an alternative to expensive signalized crossings, the City has installed several pedestrian courtesy crossings in selected locations throughout Kingston<sup>6</sup>. However, courtesy crossings only encourage motorists to stop for pedestrians, and do not require motorists to give pedestrians the right of way. Rules set

out in the Ontario Highway Traffic Act can also act as policy barriers preventing the implementation of active and sustainable transportation strategies in the city<sup>7</sup>. Since the City of Kingston does not have the authority to create by-laws which override legislation made by the province, there is currently no way that the city can turn unsignalized crosswalks into regulatory crossings which would grant pedestrians the right of way. However, it is likely that in the near future the Ontario Highway Traffic Act will be amended to allow for unsignalized crossings. When these changes occur the City of Kingston should convert courtesy crossings to regular crosswalks, with flashing lights where appropriate. These changes will need to be accompanied with a comprehensive public education strategy. However, for the time being, one or more pedestrian courtesy crossings could be installed near the site on residential streets like Mowat Avenue.

#### **6.3 COLLABORATIVE WALKING RECOMMENDATIONS**

Some recommendations to address walking require collaboration between various stakeholders for their implementation.

# W-6. Improve the Quality of Walking Paths at KPC and in the Surrounding Area

The KPC and Portsmouth Village possess a rich cultural and natural heritage and this provides an excellent opportunity for pedestrian-oriented and recreational activity. However, the current state of existing walking paths must be upgraded so that the full potential of the area can be appreciated. Potential improvements include path widening to accommodate various users, lighting, benches, and interpretive signage. During our workshop, it was expressed by many participants that widening the pathways on the KPC site near the waterfront is critical to allow for cyclists and pedestrians to access these

pathways without conflict. **Figure 6.2** illustrates how the Seawall, located at Vancouver's Stanley Park, provides a wide pathway which is able to accommodate a variety of different users easily.



Figure 6.2: The Vancouver Seawall's pathway (Wikipedia Commons, 2006).

With respect to the design of the walking paths on the KPC lands, walkways could be made more interesting by including plagues and information boards that profile the rich history of the site. Workshop participants felt this would be an opportunity to promote Kingston history. Although this suggestion is less about encouraging active and sustainable transportation to the site, and more related to promoting the use of the site for recreational purposes, it should be considered as a key part of improving the quality of the trails. Furthermore, workshop participants indicated that the pleasant scenery on the KPC grounds should act as a facilitator promoting active travel. Literature published by Stradling and colleagues found that attractive buildings were an important factor influencing walking satisfaction among abled-bodied adults8. Therefore, it may be plausible to infer from this finding that the heritage characteristics present on the KPC grounds could act to

facilitate active commuting to the site in the form of walking among physically-able individuals.

Providence Care and the City should introduce better lighting along walking paths to ensure that users feel safe and to increase the utility of these paths for active travel (see Figure 6.3). It was expressed numerous times during our workshop that the lighting of existing walking paths at KPC, especially along the waterfront trail, and along King Street in some areas, are inadequate, and that better lighting in these areas would be beneficial for travel both during the early morning and at night.



Figure 6.3: A well-lit pathway (Wikipedia Commons, 2006).

Furthermore, the inclusion of benches along the paths on site, which includes the path leading directly to the front door of the hospital, is critical for promoting AST. For older adults and individuals with mobility issues, having places to rest

along the way would make walking to and from the site a potentially more attractive option<sup>9</sup>.

#### W-7. Introduce Heated Sidewalks

It is recommended that the City of Kingston, Providence Care, and Infrastructure Ontario consider the feasibility of heated sidewalks on, and near, the future Providence Care **Hospital**. Introducing heated sidewalks on the Providence Care site and surrounding area would ensure that walking during the winter months would be both more comfortable and safe. Although it would be beneficial for all the sidewalks near and on the site to be heated, as a first priority, sidewalk heating should be considered for the primary pedestrian walkway which extends from King Street to the entrance of the hospital. During the winter sidewalks in Kingston get very slippery from the accumulation of snow and ice, and this acts as a major barrier to walking. As ploughing is rarely performed immediately following a snowfall, heated sidewalks have the advantage of offering users continuous safe access to cleared sidewalks, regardless of the weather conditions. Given their snow clearing effects, heated sidewalks can reduce the risk of injuries caused by shovelling and the incidence of falls on icy surfaces<sup>10</sup>. Since older adults often have a fear of falling, particularly in the winter months when the chances of this happening are greater, the introduction of heated sidewalks could potentially get older adults walking on and to Providence Care Hospital.

This idea to heat pavement surfaces is not a new concept, but rather has been used for several decades as a method for controlling snow and ice formation on roads, airport aprons, pedestrian walkways, and helicopter pads<sup>11</sup>. **Providence Care, in collaboration with Infrastructure Ontario and the City, should conduct further research on the technological feasibility of heated sidewalks in Kingston**, where a pilot project at the new hospital could be implemented. Heated

sidewalks involve laying automatically controlled hydronic snow melting systems under the pavement in a serpentine configuration and work by having heated fluid circulated through the series of pipe circuits<sup>11</sup>. Although these sidewalks would need to be tested for their effectiveness, this infrastructure is already in use in cold climate cities. In Reykjavik, Iceland (see **Figure 6.5**) for instance, heated sidewalks were installed over 10 years ago, and has eliminated the City's costs for snow clearance<sup>12</sup>. While Iceland has the advantage of using geothermal energy, Saskatoon has also been considering heating its sidewalks by either conducting heat through connections with nearby buildings or from the recapturing of waste energy<sup>12</sup>.



Figure 6.5: Heated sidewalk in Reykjavik, Iceland (Reykjavik Energy, 2013).

<sup>1</sup> Transport Canada. (2007). *Urban transportation showcase program: Amenities and programs that encourage active transportation in all seasons*. Retrieved October 23, 2014 from http://www.tc.gc.ca/media/documents/programs/cs53e allseason.pdf

<sup>2</sup> City of Kingston. (2002). Winter Control Plan 2002-2003. Retrieved November 14, 2014 from https://www.cityofkingston.ca/

- documents/10180/15058/Winter+Control+Plan/062e8d7a-9d54-4509-977e-4bf2b7d3dd71
- <sup>3</sup> Schlossberg, M., Rowell, J., Amos, D., & Sanford, K. (2013). Rethinking streets: An evidence-based guide to 25 complete street transformations. University of Oregon: Sustainable Cities Initiative.
- <sup>4</sup> City of Kingston representative, telephone interview, November 6, 2014.
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# 7

# CYCLING RECOMMENDATIONS

7.1	CYCLING RECOMMENDATIONS FOR PROVIDENCE CARE	.79
	B-1. INSTALL ADEQUATE END-OF-TRIP FACILITIES	.79
	B-2. CREATE A BIKE-TO-WORK CLUB AND HOLD AWARENESS	
	ACTIVITIES AT PROVIDENCE CARE	.81
	B-3. IMPLEMENT A BIKE SHARE PROGRAM AT PROVIDENCE CAP	RE
	HOSPITAL	.82
7.2	CYCLING RECOMMENDATIONS FOR THE CITY OF KINGSTON	.82
	B-4. INSTALL BIKE BOXES AT KEY INTERSECTIONS	.82
	B-5. IMPROVE BICYCLE LANE PRESENCE AND ENHANCE	
	CONNECTIVITY TO AND WITHIN THE KPC	.83
	B-6. PAINT SHARROWS ON LOCAL ROADS AND IN THE KPC	.84
	B-7. IMPLEMENT TRAFFIC CALMING MEASURES	.84

# 7.1 CYCLING RECOMMENDATIONS FOR PROVIDENCE CARE

The following are recommendations that may be implemented by Providence Care to promote cycling commutes to work.

#### **B-1. Install Adequate End-of-Trip Facilities**

Providence Care should construct adequate end-of-trip facilities at the future Providence Care Hospital such as showers, change rooms, and storage for cycling gear; as well as parking facilities and maintenance facilities. It is important that employers provide these facilities to encourage employees to commute to work via cycling.

#### **Cycling Parking Facilities**

Findings from the Providence Care employee survey suggested that a lack of bike parking facilities at the workplace dissuades employees from cycling to work due to fear of vandalism, theft, and damage caused by unfavourable weather conditions.

It is imperative that more bike parking facilities be implemented at the future hospital. As part of the current development plans, the future facility will feature long-term bicycle parking facilities, intended for daily use on a seasonal or longer basis, that will be locked and covered<sup>1</sup>. Providence Care will rent these parking spaces to users at a rate lower than vehicle parking and which is dependent upon supply and demand and maintenance costs of the space<sup>1</sup>. It is common practice for employers to charge a fee for use of such long-term parking facilities<sup>2</sup>.

It is recommended that Providence Care also provide alternative short-term parking facilities, in the form of outdoor bike racks that are covered. These facilities could be used by patients and visitors to the hospital, and by employees who cycle less often or do not want to pay for more secure storage.

#### 7 – CYCLING RECOMMENDATIONS

**Figure 7.1** shows what a covered bicycle storage facility, which covers the top and sides of the bicycles to protect them from weather elements, might look like. General practice in Canada is that these short-term parking spaces are free<sup>2</sup>. These bike racks should be highly visible and located as close to the main hospital entrance as possible, ideally within a distance of 30 metres<sup>2</sup>.



Figure 7.1: An example of a covered bicycle parking structure (CCC, 2007).

#### **Complementary Infrastructure**

Complementary end-of-trip facilities provide cyclists with a designated area to clean up after exerting themselves by commuting to work. Such facilities are particularly beneficial for commuters who travel in poor conditions, such as humidity, extreme heat, rain, snow, and slush.

These facilities are often provided along with long-term bicycle parking facilities and include some combination of showers, change rooms, bathrooms, lockers, drying facilities for clothing and footwear, and vending machines with refreshments and food (see **Figure 7.2**)<sup>2</sup>. Research indicates that the availability of showers has a significant influence on cycling as a commute choice<sup>3</sup>. As such, it is recommended that the complementary infrastructure be offered at the future hospital along with the long-term bicycle parking facilities. All end-of-trip facilities should be available 24 hours a day, so that employees who choose to cycle to work are able to use these facilities, regardless of their schedules. Given the specific attire that cycling demands during extreme hot and cold weather, this infrastructure is essential to promote cycling among employees on a year-round basis.



Figure 7.2: Examples of end-of-trip facilities at the workplace (BWA, 2014).

#### **Bike Repair Stations and Vending Machines**

Bike repair stations are small stations that contain tire pumps and tools to adjust and fix bicycles while on the go. It is recommended that Providence Care provide a bike repair station at the future facility that is similar to the stations implemented at McGill University (see **Figure 7.3**). This station should be accessible to both the employees in long-term bike parking facilities, as well as patients and visitors using short-term bike parking facilities.

In 2013 McGill University installed two bike repair stations, each containing two air pumps, and eight theft-resistant tools for minor repairs<sup>4</sup>. Additionally, as with many other bike repair stations, QR codes are provided at the stations so that users may access important information and guides to use the bike repair station on their mobile devices<sup>4</sup>. Recently, The Mansion, a restaurant and bar in Kingston, implemented a bike station in front of their building. Workshop and interview findings determined that residents are pleased with this newly created infrastructure and would like to see similar bike stations built elsewhere in Kingston<sup>5</sup>.



Figure 7.3: A bicycle repair station at McGill University (McGill University, 2014).

Additionally, Providence Care should provide a vending machine that contains emergency bike gear, including tubes and patch kits, which would further help employees who encounter unexpected problems. This amenity has been successful at Union Station in Toronto<sup>2</sup>.

## B-2. Create a Bike-to-Work Club and Hold Awareness Activities at Providence Care

Providence Care should host cycling awareness activities for employees to promote cycling as a commute mode. People are more open to try cycling and choose it for their commute mode when they are provided with information and are able to connect socially with coworkers who cycle. This can be accomplished in several ways:

- Provide employees with maps of bicycle routes, endorsed by the City of Kingston, that outline viable cycling commuter routes to and from the hospital
- Hold lunch-time or full-day events at the hospital in which cycling information, regarding safety, feasibility, employee incentives, and personal and community benefits is dispersed through printed materials and guest speakers
- Host training workshops that teach safe cycling practices. Providence Care could host Cycle Kingston to teach cycling skills to employees, as well as Kingston Transit to demonstrate the Rack-&-Roll program.
- Create a bike-to-work club at the future hospital. Bike-to-Work clubs within the workplace create a cycling community that promotes cycling as a commute mode. The club could facilitate the above-listed events, identify improvements needed at the workplace to support cycling, keep members interested in cycling, and recruit new members <sup>6</sup>. A bike-to-work club could also encourage participation in larger cycling challenges, such as a bike-to-

work week, bike month, and the Canadian Commuter Challenge.

# **B-3.** Implement a Bike Share Program at Providence Care Hospital

Providence Care should implement a bike share program that allows employees to utilize bikes for short-term trips (e.g., over their lunch hours). A private bike share program is relatively easy to implement, with a small upfront investment, in comparison to a public bike share program, which often requires significant financial investment <sup>7</sup>. This would also create an opportunity for employees who do not own bicycles to participate in cycling education and awareness events and try cycling without a significant expense.

To administer such a program, Providence Care would need to purchase and maintain bikes, helmets, and locks; create on-site bike storage facilities; and establish protocols for tracking and monitoring bicycle use<sup>7</sup>. This recommendation will likely be more feasible in the future, pending future development on the KPC and surrounding area which will introduce more amenities within a reasonable cycling distance.

# 7.2 CYCLING RECOMMENDATIONS FOR THE CITY OF KINGSTON

The following are recommendations that may be implemented by the City of Kingston to promote cycling commutes. These recommendations may also be applied throughout Kingston to develop a comprehensive cycling network within the city.

#### **B-4.** Install Bike Boxes at Key Intersections

The City should install bike boxes at appropriate intersections to make it safer for cyclists to travel through

intersections, and ultimately improve the connectivity of the cycling network. Findings from our interviews and workshop suggest that improvements need to be made at intersections near Providence Care that are dangerous for cyclists to navigate. The City understands the importance and benefits of bike boxes and has mentioned that over the next four years that it has plans to start implementing these intersection features<sup>8</sup>.

Bike boxes are painted as green areas on the road containing a white bicycle symbol, and are connected to a cycling lane that is also paved in green<sup>9</sup>. As shown in **Figure 7.4**, cyclists stop in front of motorists and are able to proceed through the intersection first when the light turns green. Right turns on red lights are generally not permitted in these intersections, unless a sign is posted with an exception. As such, bike boxes can prevent "right-hook" collisions between motorists and cyclists. Research has shown that bike boxes reduce conflicts between cyclists and motorists, improve the behaviour of motorists regarding cyclists, and increase perceived road safety for both cyclists and motorists<sup>10</sup>.



Figure 7.4: Bike box on campus at Duke University in Durham, NC (Raisman, 2012).

Left-turn queue boxes should be implemented at the intersections of King Street with Portsmouth Avenue and with Country Club Drive, and at the intersection of Portsmouth Avenue and Johnson Street. Due to the unique configuration of the off-road cycling lanes present on part of King Street and the lanes of traffic that separate cyclists from left-turn lanes, this alternate form of bike box is appropriate for these specific intersections. Left turn queue boxes (a form of bike box; demonstrated in Figure 7.5) are outlined with a bar of



**Figure 7.5:** An example of a left-turn queue box (Wikipedia Commons, 2011).

white paint, feature a left turn arrow and bike stencil, and are filled with green paint to improve visibility. The boxes indicate where cyclists can wait to cross intersection. Rather the than requiring cyclists to cross traffic to enter a left lane, cyclists are turn directed to continue straight through the intersection before stopping in the bike box. When the traffic signal changes direction, cyclists can then proceed straight across the intersection again,

completing the turn in a much safer manner. The Ontario Traffic Council recommends that bike boxes be used where high vehicle volumes or high volumes of turning cyclists are predicted<sup>11</sup>.

# B-5. Improve Bicycle Lane Presence and Enhance Connectivity to and within the KPC

The City should upgrade arterial roads to include bike lanes where possible and should expand such infrastructure into the entrance of the KPC. The presence of bike lanes decreases the perception of danger due to vehicular traffic, thereby encouraging more people to use this mode of transportation <sup>12</sup>. In a study completed by the School of Occupational and Public Health at Ryerson University in Toronto it was determined that risks of injuries for cyclists are lowest when cycling infrastructure, such as bike routes, painted bike lanes, and off-road bike paths are present<sup>13</sup>. Additionally, literature suggests that the risk of injury for cyclists and other road users increases when cyclists were paired with motorists and/or pedestrians, even when simple painted bike lanes are present; whereas the risk of injury decreases when bike lanes are present that are physically separated by a barrier<sup>13</sup>.

Although Kingston has increased the presence of bike lanes over the past several years, additional bike lanes need to be added. Most of the bike lanes that have been added are simple painted bike lanes, which have been retrofitted to existing roads that could be easily modified to include such infrastructure.

Moving forward, safe and adequate bike lanes should be added to the length of King Street as this is a major commuting corridor that connects residential neighbourhoods in the west and downtown Kingston to Portsmouth Village, St. Lawrence College, and the KPC. Currently, the bike lanes along this street are disconnected. Bike lane infrastructure should extend along Front Road to Bayridge Drive, which would connect west Kingston to Portsmouth Village. Numerous survey respondents indicated they do not feel safe cycling on this stretch of road, as traffic moves well above the 60km/h speed limit. Creating a continuous bike lane along this major corridor would make for a

convenient and effective commuter route for cyclists coming from both east and west directions to the KPC.

#### B-6. Paint Sharrows on Local Roads and in the KPC

The City of Kingston should introduce sharrows in locations where implementing bike lanes is not feasible or appropriate. Sharrows are shared lane pavement markings delineated by a bicycle and two chevrons (see Figure 7.6) that are painted on the road to locate where cyclists should be riding. Sharrows are intended to indicate to cyclists and motorists where cyclists should position themselves on streets where there is not enough room for a separate bicycle lane<sup>14,15</sup>. Although shared roadways between motorist and cyclists are considered to be less safe than separated bike lanes bike lanes are not physically or economically possible to implement on every road; nor are they necessary on every road type<sup>13</sup>.



**Figure 7.6:** Example of a sharrow showing rider location within the roadway that safely avoids the opening car door (CAN, 2012).

Since 2011, the City has adopted sharrow infrastructure at locations such as the La Salle Causeway and segments of Brock Street and Johnson Street 16. When sharrows are implemented on local roads, cyclists can safely navigate these alternative commuting routes instead of using major collector and arterial roads. Our interview and workshop findings determined that cyclists already use Baiden Street, Churchill Street, and Mary Street for cycling to avoid traffic volumes on King Street. Sharrows should be implemented on these roads. Similarly, sharrows could be implemented on Mowat Avenue and Young Street, which would connect these roads directly to the Waterfront Trail, which provides access to the KPC. Finally, sharrows could be implemented on Country Club Drive, which would connect cyclists to the Lake Ontario Park entrance, making for another viable commuter route to the KPC. Implementing bike lanes on local roads is often impractical due to constraints on the width of the right-of-way. However, adding sharrows at these locations would make cycling a safer commuting option to and from the KPC.

Whereas implementing bike lanes through the entire KPC does not make sense, due to low traffic volumes the majority of the time; implementing sharrows on the campus to direct cyclists and motorist to share the road is a practical option. Specifically, using sharrows along the entrance road south of Portsmouth Avenue to direct cyclists to Providence Care Hospital, will make cycling a more attractive commuting option.

#### **B-7. Implement Traffic Calming Measures**

The City should implement traffic calming measures to slow traffic and make AST modes safer and more attractive commuting options. Traffic calming measures aim to reduce conflicts between road users and mitigate the undesirable

effects of traffic within communities. These effects include low usage by transit users, cyclists, and pedestrians, aesthetically unappealing neighbourhoods, and speeding and aggressive driving that create unsafe environments<sup>17</sup>.

Our primary research indicated that traffic speed and volume both pose significant barriers to people commuting actively to Mental Health Services, particularly on King Street and Front Road. Interview and workshop participants supported the implementation of traffic calming measures, such as curb extensions, also known as bulb-outs. Curb extension have been implemented on Mowat Avenue, where they have helped reduce traffic speed. Adding additional traffic calming measures to Portsmouth Village and commuter routes will make AST modes of transportation more appealing.

Through the *Traffic Calming Policy*, the City supports a variety of vertical and horizontal traffic calming measures; however have strict guidelines to implementing such infrastructure <sup>18</sup>. Additional curb extensions, along with painted sharrows – as outlined earlier – should be implemented on Baiden Street, Mary Street, and Churchill Street, local roads that are currently used as informal cycling corridors. **Figure 7.7** shows an example of a curb extension with a sharrow.

While Front Road and King Street provide an important arterial route to motorists, the high traffic volumes and excessive vehicle speeds west of Portsmouth Avenue create a significant barrier to AST users. Additional traffic calming measures, such as lane narrowing and street trees, should be implemented. Introducing these measures, in moderation, along Front Road would reduce vehicle speeds to be comparable to the posted speed limit and make commuting via cycling along this corridor safer and more attractive. Lane narrowing would have an added benefit of affording more width for the separated cycling

lanes which, at present, are provided inconsistently along these roads.



**Figure 7.7:** Example of a curb extension and a sharrow in Squirrel Hill, Pittsburgh (Bike Pittsburgh, 2009).

<sup>1</sup> Providence Care representative, personal interview, November 3, 2014.

<sup>&</sup>lt;sup>2</sup> Transport Canada. (2010). Bicycle end-of-trip facilities: A guide for Canadian municipalities and employers. Retrieved November 15, 2014 from https://www.fcm.ca/Documents/tools/GMF/ Transport\_Canada/BikeEndofTrip\_EN.pdf

<sup>&</sup>lt;sup>3</sup> Hunt, J.D., & Abraham, J.E. (2007). Influences on bicycle use. *Transportation, 34*(4), 453-470. doi:10.1007/s11116-006-9109-1

<sup>&</sup>lt;sup>4</sup> McGill University. (2014). *Bike repair rack (SP0107)*. Retrieved November 15, 2014 from http://www.mcgill.ca/sustainability/bike-repair-rack-sp0107-0

<sup>&</sup>lt;sup>5</sup> Portsmouth District Community Association representatives, personal interview, October 21, 2014.

<sup>&</sup>lt;sup>6</sup> Vélo Québec. (n.d.b). Operation bike-to-work. Retrieved October 8, 2014 from

http://www.velo.qc.ca/active-transportation/Operation-bike-to-work/

<sup>&</sup>lt;sup>7</sup> 36 Commuting Solutions. (n.d.). *Employer bike-sharing program toolkit*. Retrieved November 23, 2014 from http://36commutingsolutions.org/us36/wp-content/uploads/ Employer-Bike-Sharing-Program-Toolkit.pdf

- 8 City of Kingston representative, telephone interview, November 6, 2014.
- <sup>9</sup> City of Ottawa. (2014). Cycling safety awareness program: Bike box. Retrieved November 4, 2014 from http://ottawa.ca/en/residents/ transportation-and-parking/cycling/bike-box
- <sup>10</sup> Dill, J., Monsere, C. M., & McNeil, N. (2012). Evaluation of bike boxes at signalized intersections. *Accident Analysis and Prevention*, *44*(1), 126-134. doi:10.1016/j.aap.2010.10.030
- Ontario Traffic Council. (2013). Ontario Traffic Manual, Book 18: Cycling facilities. Retrieved November 15 from http://www.otc.org/research/download-manuals/
- <sup>12</sup> Cycle Toronto. (n.d.). Protected bike lanes: Where, why, and what are they? Retrieved November 14, 2014 from http://cycleto.ca/ protected-bikelanes/where-why-what
- <sup>13</sup> Harris, M.A., Reynolds, C.C.O., Winters, M., Cripton, P.A., Shen, H., Chipman, M.L., & Teschke, K. (2013). Comparing the effects of infrastructure on bicycling injury at intersections and non-intersections using a case-crossover design. *Journal of Injury Prevention*, 19(5), 303-310. doi:10.1136/injuryprev-2012-040561
- <sup>14</sup> Cycle Toronto. (2010). So what's a sharrow anyway? & 2010 bike maps now available. Retrieved November 14, 2014 from http://cycleto.ca/news/2010/05/18/so-whats-sharrow-anyway-2010-bike-maps-now-available
- <sup>15</sup> City of Ottawa. (n.d.). Sharrows. Retrieved November 14, 2014 from http://ottawa.ca/en/residents/transportation-and-parking/ cycling/sharrows
- <sup>16</sup> City of Kingston. (2014). Cycling: Sharrows. Retrieved November 14, 2014 from https://www.cityofkingston.ca/residents/gettingaround/cycling
- <sup>17</sup> Transport Canada. (2005). *Urban transportation showcase program: Traffic calming in Canadian urban areas*. Retrieved November 14, 2014 from http://www.tc.gc.ca/media/documents/programs/cs35e\_trafficcalming.pdf
- <sup>18</sup> City of Kingston. (2013). *Traffic calming policy*. Retrieved September 19, 2014 from https://www.cityofkingston.ca/documents/10180/20847/Traffic+Calming+Policy/da476901-42a0-4c9a-9aaf-0e76222de438

# 8

# TRANSIT RECOMMENDATIONS

8.1	TRANSIT RECOMMENDATIONS FOR PROVIDENCE CARE	<b>87</b>
	T-1. OFFER KINGSTON TRANSIT'S TRANSPASS TO EMPLOYEES.  TRANSIT RECOMMENDATIONS FOR THE CITY OF KINGSTON	
	T-2. UPGRADE EXISTING BUS STOPS AND SHELTERS TO IMPROVACCESSIBILITY AND COMFORT	
	T-3. INSTALL USER-ACTIVATED HEATING SYSTEMS AT PRIORITY	′
	BUS SHELTERS	88
	T-4. INSTALL INFRASTRUCTURE AND TECHNOLOGY TO REDUCE	
	TRANSIT DELAYS AND TRIP TIME	89
	T-5. ENHANCE AND PROMOTE PARK-AND-RIDE FACILITIES	90
8.3	COLLABORATIVE TRANSIT RECOMMENDATIONS	91
	T-6. PROVIDE REAL-TIME TRANSIT INFORMATION	91
	T-7: PROMOTE KINGSTON'S RACK AND ROLL PROGRAM	91
	T-8: Develop Well-Connected Transit Linkages for	
	PEDESTRIANS AND CYCLISTS	92

# 8.1 Transit Recommendations for Providence Care

The following are recommendations that may be implemented by Providence Care to promote cycling commutes to work.

### T-1. Offer Kingston Transit's Transpass to Employees

Providence Care should implement Kingston Transit's Transpass program to provide its employees with affordable transit alternatives to the car, and to increase its commitment to AST. Transpass is an employer-provided bus pass program that allows employees to purchase and renew Kingston Transit passes at a discounted rate. Workplaces must register ten employees to be eligible for the program, and given the large number of employees that work for Providence Care, the institution is an ideal employer for the Transpass program<sup>1</sup>. Passes are paid through direct payroll deductions for savings of at least \$10 off the regular monthly adult fare, resulting in a discounted price of \$622. Transit passes are offered through the My Card system, which is a smart-card technology that allows passes to be automatically reloaded at the discount rate each month and scanned at the fare box on each bus. The Transpass program also allows employees to receive a public transit tax credit through an income tax deduction<sup>3</sup>. Despite low transit ridership at present, a quarter of respondents to our survey of Providence Care employees indicated a willingness to take public transit once the future facility is constructed, and a third of respondents indicated that a discounted transit pass would be an important factor in encouraging them to take transit.

# 8.2 Transit Recommendations for the City of Kingston

The following recommendations may be implemented by the City of Kingston to promote walking to the current and future facility.

# T-2. Upgrade Existing Bus Stops and Shelters to Improve Accessibility and Comfort

As part of the City's Multi-Year Accessibility Plan, Kingston Transit is committed to developing accessible bus shelters4. Where feasible, bus stops in Kingston should sit on sizable, accessible concrete pads, have covered shelters with integrated seating, and be adequately lit. Shelters should meet or exceed the design guidelines outlined in the Kingston Transit Accessible Services handbook, as well as the upcoming Accessibility for Ontarians with Disabilities Act (AODA) design standards. Accessibility for all users is enhanced when bus shelters sit on concrete pads that are kept free of snow and ice, and connect to pedestrian infrastructure. Shelters should contain seating and be fully covered to protect users from wind, rain, and snow. User safety is enhanced when transit stops are well illuminated, and it also makes it easier for bus drivers to see waiting transit users. Providing bus stops with an identification code that is linked to Kingston's Trip Planner would allow new users greater certainty that they are waiting at the correct bus stop. These upgrades will enhance the accessibility, security, and comfort of transit use, and potentially increase ridership. Some of these recommendations have already been implemented at Kingston transit stops, including the bus stop nearest to the entrance of the future Providence Care Hospital, which was upgraded with a fully covered shelter, integrated seating, and a long concrete pad (see Figure 8.1).





**Figure 8.1:** The image on the left displays an accessible, glass-covered shelter at the southwestern corner of the intersection of King Street and Portsmouth Avenue in Kingston. The image on the right presents a bus stop without amenities on Union Street in Kingston (Tan, 2014; Newton, 2014).

Additionally, the City of Kingston should investigate providing secure and well-lit bicycle storage facilities at key transit locations, such as transfer points. These facilities might include covered bicycle racks, lockers, and caged storage boxes. Developing these amenities at transit stops would facilitate the mixing of pedestrian, cycling and transit modes for complete commuting journeys, and provide an alternative to Rack-and-Roll bike carriers when using this amenity is not feasible. An example to follow is the Toronto Transit Corporation's (TTC) St. Clair W. station, which features well lit, covered bicycle storage within the transit shelter<sup>5</sup>.

# T-3. Install User-Activated Heating Systems at Priority Bus Shelters

More than a third of survey respondents indicated that they would be more likely to take transit if they did not have to make a transfer during the journey. While increasing bus frequencies is an expensive municipal undertaking, and to some extent has

already been achieved in Kingston with the new express routes, improving the experience of waiting at a bus stop may increase the willingness of individuals to choose trips with transfers. Therefore, it is recommended that Kingston Transit consider installing user-activated heating systems at prioritized stop locations, including transfer points and remote locations. User-activated heating systems have been integrated in several Canadian cities, including St. Paul, Manitoba and Brampton, Ontario (see Figure 8.2). The Ontario Ministry of Transportation recommends that bus stops should incorporate push-activated heating at remote stations or when waiting times between buses are long<sup>6</sup>. Passenger-activated heating would help to improve user comfort and safety during colder winter months. Implementing a heating system pilot program at several major bus stops would allow Kingston Transit to assess the demand and economic feasibility of these upgrades. The bus stop nearest to Providence Care Hospital, at the corner of King Street and Portsmouth Avenue, is an ideal candidate for the integration of a heating system given the long distance from the stop to the hospital.

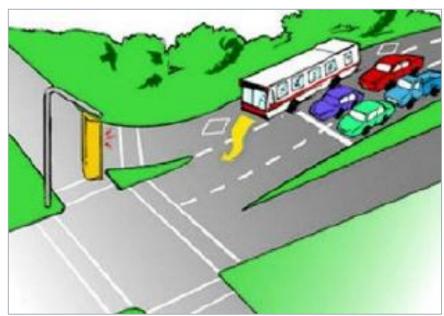


**Figure 8.2:** Passenger-activated heated bus shelter in Brampton, Ontario (Ontario Ministry of Transportation, 2011).

# T-4. Install Infrastructure and Technology to Reduce Transit Delays and Trip Time

As identified in the *Kingston Transit Redevelopment Plan*, improving transit service will require addressing traffic delays experienced by buses, specifically during peak hours <sup>7</sup>. Providing priorities for transit buses through intersections can reduce the length of transit trips and make delays less likely, thereby improving the convenience and reliability of taking transit. Therefore, **the City of Kingston should install transit specific queue jump lanes at intersections, and transit priority signals**, both of which are proposed in the *Kingston Transit Redevelopment Plan*<sup>7</sup>.

Transit specific queue jump lanes should be implemented at intersections near Providence Care Hospital, specifically those with separate right turn channels. The intersection of King Street and Portsmouth Avenue is a good candidate for this infrastructure, as many buses travel through this intersection as they head to or leave from the St. Lawrence College transit hub. Although intersection configurations vary, in general queue jumping allows buses to turn out of a lane that is congested and pull into a designated transit lane that is clear from vehicles waiting at a stoplight. One configuration involves a painted stop bar for buses, allowing buses to pull ahead of regular traffic at a stoplight, should they need to turn left and require the priority (see Figure 8.3). Introducing transit specific queue jump lanes requires public education for drivers on the driving restrictions surrounding the policy. Regular enforcement is also needed to ensure that transit only lanes are used properly<sup>8</sup>.



**Figure 8.3:** An example of one form which a queue jump lane can take (City of Ottawa, 2014).

The City of Kingston should also equip traffic light controlled intersections with transit priority signals, where feasible. Transit priority signals can take on different forms<sup>9</sup>. Active priority control strategies require the technology of onboard transit vehicle tracking that is connected to the central traffic control system. Transit vehicles approaching an intersection may send a request for priority through the intersection during highly congested traffic volumes. A transit priority through an intersection can take the form of an extended green light until the transit vehicle has cleared the intersection, or a shortened red light.

### T-5. Enhance and Promote Park-and-Ride Facilities

There are currently four park-and-ride facilities in Kingston; free parking spaces are provided at these locations for individuals who will be using transit for the rest of their trip. Because the utilization of these facilities has been higher than originally predicted, there is reason to reach out to other commuters with similar travel patterns and who might benefit from park-and-ride services<sup>1</sup>. Survey respondents commented that they would be willing to park at a park-and-ride facility, and then cycle to work to get some exercise. Therefore, it is recommended that the City of Kingston install secure bike lockers at park-and-ride facilities to allow commuters other than transit users to utilize the facilities (see Figure 8.4). The City of Kingston should accompany infrastructure upgrades with effective marketing strategies to emphasize the safety and convenience of the lots. An important strategy includes integrating the system within Kingston's online Trip Planner, as well as Providence Care's future online travel portal. This would enhance awareness of the availability of the service in the context of other commuting options.

Strategically placed park-and-ride facilities can ease rush hour congestion and lower fuel consumption by allowing motorists to switch to AST for part of their trip. Representatives from Kingston Transit have identified the importance of enhancing and promoting the existing program to increase its visibility and use in the city¹. Centre 70, at the corner of Days Road and Front Road, is the closest Park and Ride facility to the hospital, and is located approximately 5.5 kilometres away.



**Figure 8.4:** Bike lockers at the University of Saskatoon (University of Saskatoon, n.d).

### **8.3 COLLABORATIVE TRANSIT RECOMMENDATIONS**

Some recommendations to address walking require collaboration between various stakeholders for their implementation.

### T-6. Provide Real-Time Transit Information

Having access to accurate, real-time transit information is key to maintaining and increasing ridership. In its *Transit Redevelopment Plan*, Kingston Transit has outlined that it is in the process of analyzing future transit-information sharing tools<sup>7</sup>. Providing real-time trip information would enable users to more accurately plan their transit trips and allow people to minimize time spent outdoors at bus stops in poor conditions, such as nighttime or in the colder months.

It is recommended that Kingston Transit develop real-time transit information systems, and install electronic passenger information boards at city bus stops where feasible. With coordination with Providence Care, these systems could be integrated into electronic displays located in the lobby main entrance of the future facility, so that individuals are better able to time the long walk to the nearest bus stop at King Street and Portsmouth Avenue. Developing a mobile app and integrating the information with Kingston Transit's Trip Planner would offer maximum convenience. These transit-information systems work by displaying real-time arrival information created by GPS technology that measures the position and speed of busses. This type of display system is able to take into account transit delays that posted bus schedules cannot account for. In addition to location and time data, passenger information boards should include maps of the area displaying where the nearest bicycle racks, storage systems, pedestrian linkages, and parking lots are located.



**Figure 8.5:** A passenger information board at a transit stop in Portland, Oregon. (Morgan, 2014).

### T-7: Promote Kingston's Rack and Roll Program

Drawing from existing Kingston Transit educational tools, Providence Care should educate and motivate employees to take advantage of Rack and Roll bike carriers. With the extension of the Rack and Roll system throughout the entire year, all Kingston Transit busses can transport three bikes at any given time. However, as indicated by findings from our workshop, placing a bicycle on a bus rack can be an intimidating experience, and a deterrent for individuals otherwise interested in the program. Given the initial success of the program, Kingston Transit is looking to market the program to more users and is currently in the process of creating a video to educate users on how to use the equipment. Therefore, Providence Care should provide access to the video in an AST workshop setting, which could include a hands-on activity that allows individuals to go through the physical motions of placing a bicycle on a bus rack. This program should

be connected to the employer-led initiatives to promote cycling that are discussed in Chapter 7.



Figure 8.6: Visual demonstration of Rack and Roll (City of Kingston, 2014).

# T-8: Develop Well-Connected Transit Linkages for Pedestrians and Cyclists

Ensuring that access to public transit is comfortable, convenient, and safe involves developing defined and effective linkages around transit stops for pedestrians and cyclists. Linkages refer to cyclist and pedestrian infrastructure such as pedestrian roadway crossings, sidewalks, multi-use pathways, and bicycle pathways and lanes. Without secure connections across roadways, pedestrians and cyclists might compromise their safety in an effort to access a transit stop.

Transit linkages should be installed or improved where necessary at transit stop locations near Providence Care Hospital. Priority for initial improvements should be given to locations in which pedestrians and users might face unsafe conditions when attempting to access transit infrastructure, such as having to cross a busy roadway without a signalized pedestrian crossing (see Figure 8.7 and Figure 8.8). Appropriate cycling infrastructure is discussed in greater detail in Chapter 7. However, pedestrian linkages also benefit cyclists, who can dismount from their bicycles and cross roadways on foot.



**Figure 8.7:** A poorly-connected bus stop on the north side of King Street, near the entrance to Lake Ontario Park. (highlighted in red) (Newton, 2014).



**Figure 8.8**: Bus stop in downtown Vancouver, which is directly linked to well-marked pedestrian and cycling infrastructure (Krueger, 2014).

The following recommendations are meant to specifically improve transit linkages near Providence Care Hospital:

- Install a fully signalized intersection at Country Club
   Drive and King Street. After recent revitalizations, Lake
   Ontario Park is much busier than before, particularly in the
   summer months and during special events, such as
   municipal fireworks displays. There are currently no
   pedestrian connections to the north side of King Street, and
   in the personal experience of our team members, traffic
   generally travels well above the speed limit at this stretch of
   road.
- Install a pedestrian crossover, or less ideally, a courtesy crossing, across Portsmouth Avenue at Baiden Street or Churchill Street, in order to link residential neighbourhoods to the St. Lawrence College transit hub. Pedestrians are unlikely to walk south to cross at the controlled intersection of King Street and Portsmouth Avenue, a round trip that would add 200 m from Baiden Street and 400 m from Churchill Street.
- Install a pedestrian crossover, or less ideally, a courtesy crossing, across Mowat Avenue at Francis Street. There is a bus stop on the southeast corner of this intersection, but the sidewalk that leads south, located on the east side of Mowat Avenue, terminates at this location, and pedestrians must cross to the west side of the street if they are going to or heading from this bus stop. Alternately, the City of Kingston should extend the sidewalk on the east side of Mowat Avenue, so that it continues southwards to Union Street. Findings from our workshop and from personal experience indicate that many pedestrians walk on the street instead of crossing over to the sidewalk on the west side of the street, particularly if they will be turning and heading east on Union.

- Paint white ladder crossings across the right turn channels of intersections to remind motorists to check for, and yield to, pedestrians. Near the hospital this should be done at the intersections of King Street and Portsmouth Avenue, as well as where King Street intersects Mowat Avenue and Union Street. Intersection improvements are discussed in more detail in Chapter 10.
- Prioritize snow clearance of pedestrian and cycling transit linkages. Some improvements will need to be collaborative efforts between Kingston Transit and Providence Care or Infrastructure Ontario, regarding the location of transit stops and pede
- strian and cycling linkages. Coordination with St. Lawrence College is also recommended to enhance connectivity to the nearby transit hub. Snow clearance recommendations are discussed in more detail in Chapter 6.

<sup>&</sup>lt;sup>1</sup> City of Kingston representatives, personal interview, October 7, 2014.

<sup>&</sup>lt;sup>2</sup> City of Kingston. (2014). About the Transpass program. Retrieved November 13, 2014 from http://archive.cityofkingston.ca/ residents/transportation/transit/transpass.asp

<sup>&</sup>lt;sup>3</sup> Canada Revenue Agency. (2010). About the Tax Credit for public transit. Retrieved November 13, 2014 from http://www.transitpass.ca/about\_e.php

<sup>&</sup>lt;sup>4</sup> City of Kingston. (2012). Multi-Year Accessibility Plan. Retrieved December 7, 2014 from https://www.cityofkingston.ca/documents/ 10180/94856/Mulit-year+Accessibility+Plan+2013-2017.pdf/e42bd397-7d58-4416-a98f-0bcea96fe8eb

<sup>&</sup>lt;sup>5</sup> Duncan. (2010). *A look at the St. Clair TTC bike shelter*. Retrieved November 15, 2014 from http://bikingtoronto.com/duncan/a-look-at-the-st-clair-ttc-bike-shelter/

<sup>&</sup>lt;sup>6</sup> Ontario Ministry of Transportation. (2011). Location and design of transit stops. Retrieved November 15, 2014 from http://www.mto.gov.on.ca/english/transit/supportiveguideline/enhancing-access-transit.shtml

<sup>&</sup>lt;sup>7</sup> City of Kingston. (2011). Kingston Transit redevelopment plan 2011-2015. Retrieved September 30, 2014 from https://www.cityofkingston.ca/documents/10180/19838/Transit +Redevelopment+Plan/54fd3026-8fc8-4015-abf3-764dbb802f2a

### **8 – TRANSIT RECOMMENDATIONS**

- 8 Seattle Department of Transportation. (2010). Transit Master Plan briefing book. Seattle, Washington: Department of Transportation. Retrieved November 30, 2014 from http://www.seattle.gov/ transportation/tmp\_bbook.htm
- <sup>9</sup> Smith, H., Hemily, B, Ivanovic, M. (2005). Transit signal priority (TSP): A planning and implementation handbook. The United States Department of Transportation. Retrieved November 30, 2014 from http://www.fta.dot.gov/documents/TSPHandbook10-20-05.pdf

# CARPOOL RECOMMENDATIONS

9.1	CARPOOLING RECOMMENDATIONS FOR PROVIDENCE CARE 95
	C-1. CHARGE A REDUCED FEE FOR CARPOOL PARKING SPOTS.95
	C-2. Provide Dedicated Parking Spaces for Carpooling
	EMPLOYEES95
9.2	COLLABORATIVE CARPOOLING RECOMMENDATIONS96
	C-3. IMPLEMENT A WORKPLACE AND/OR REGIONAL CARPOOLING
	PROGRAM96

Due to the length of trip, it is not feasible for many people to walk, cycle, or take transit to Providence Care Hospital. Findings from our survey underscore this point, as 33% of Providence Care employees indicated they live greater than 20 km from their worksite. Accordingly, almost a third of employees have commutes that are 30 minutes or longer. These individuals are potential candidates for carpooling, which is a more sustainable option than driving to work alone.

# 9.1 CARPOOLING RECOMMENDATIONS FOR PROVIDENCE CARE

The following are recommendations that may be implemented by Providence Care to promote cycling commutes to work.

### C-1. Charge a Reduced Fee for Carpool Parking Spots

Providence Care should set the rate for carpool parking lower than the rate for single occupant parking to provide an incentive for employees to carpool. Even though carpooling already involves reduced commuting costs, financial incentives like parking subsidies are an effective way to increase rates of employee carpooling. These incentives can overcome inconveniences associated with carpooling, such as reduced schedule flexibility and longer commute time <sup>1</sup>. Since the majority of carpools do not operate every day of the week, daily parking passes are more amenable to carpooling than weekly or monthly passes <sup>2</sup>. If this arrangement is not possible, employees could receive a credit for each day they arrive to work by carpool.

# C-2. Provide Dedicated Parking Spaces for Carpooling Employees

Providence Care should provide dedicated and well-marked parking spaces for carpooling employees. Because most

### 9 - CARPOOL RECOMMENDATIONS

carpools do not operate daily, it is recommended that these parking spaces are "first-come, first-served", rather than allocated to specific carpool registrants. This will reduce or eliminate over-allocation of carpool parking spaces. Dedicated carpool spaces act as an incentive to potential carpoolers, and also increase general awareness of carpooling programs.



Figure 9.1 Carpool parking in a GTA employee lot (Smart Commute, 2014).

# 9.2 COLLABORATIVE CARPOOLING RECOMMENDATIONS

# C-3. Implement a Workplace and/or Regional Carpooling Program

In the short term, Providence Care should create an institutional membership on an online workplace carpooling program. In the long term, large employers, the City of Kingston, and neighbouring municipalities should work to implement a regional carpooling program. This would allow people to form carpools with employees from nearby workplaces, such as St. Lawrence College or the offices on the Kingston Provincial Campus (KPC). A regional program could benefit Providence Care employees who work in Kingston, as well as in other municipalities. Like walking, cycling, or taking transit, carpooling programs are most successful when supported by an emergency ride home program.

Potential carpoolers may find it difficult to find a compatible commuting partner. Online carpool programs remove this barrier by matching people with other commuters based on factors like home location, work scheduling, and other preferences. Users of these systems set up a profile and start their own carpool, or are matched with other compatible carpools. Metrolinx oversees a free online carpool matching service as part of its Smart Commute program for the Greater Toronto Area and Hamilton<sup>3</sup>. This service replaced several smaller, disjointed services operating in the region, making it easier for people to find matches with other carpoolers 4. Employers can also create accounts, which allow employees to search for matches at their workplace. This service has proven successful, with over 6000 commuters signed on to the service and more than 500 carpools formed after only 16 months<sup>4</sup> (Lanyon, 2007).

- <sup>2</sup> Rose, G. (2002). Providing premium carpool parking using a low-tech ITS initiative. *Institute of Transportation Engineers. ITE Journal*, 72(7), 32-36. Retrieved November 15, 2014 from http://search.proquest.com/docview/224891378?accountid=6180
- <sup>3</sup> Metrolinx. (n.d.). Smart Commute: A Program of Metrolinx. Retrieved November 15, 2014 from http://www.smartcommute.ca/
- <sup>4</sup> Lanyon, R. (2007). Smart Commute initiative: Establishment of a multijurisdictional workplace-based transportation demand management program serving the Greater Toronto Area and Hamilton. Paper prepared for the 2007 Annual Conference of the Transportation Association of Canada, Saskatoon, Saskatchewan. Retrieved from http://conf.tac-atc.ca/english/resourcecentre/ readingroom/conference/conf2007/docs/s14/lanyon.pdf

<sup>&</sup>lt;sup>1</sup> Brownstone, D., & Golob, T. F. (1992). The effectiveness of ridesharing incentives. *Regional Science and Urban Economics*, 22(1), 5-24. doi:10.1016/0166-0462(92)90023-T

# 10

# STRATEGIES TO ADDRESS KEY CHALLENGES

10.1 REVIEW OF KEY CHALLENGES	100
10.2 STRATEGIES TO ADDRESS THE DISTANCE FROM HOSPIT	AL
ENTRANCE TO TRANSIT SERVICE	100
10.2.1. Provide a Shuttle Service	100
10.2.2. SHORTEN THE PEDESTRIAN ROUTE FROM THE HOS	SPITAL
ENTRANCE TO KING STREET	101
10.2.3. ENHANCE THE PLANNED PATHWAY	102
10.2.4. INSTALL HEATED SIDEWALKS NEAR THE HOSPITAL	
ENTRANCE	103
10.2.5. Provide Real-Time Transit Information	103
10.3 A COMPREHENSIVE PARKING STRATEGY	103
10.3.1. PROVIDE FLEXIBLE PARKING PASSES FOR PROVIDE	ENCE
CARE EMPLOYEES	104
10.3.2 Lease Excess Parking Space	104

10.3.3 PARKING RATES FOR EMPLOYEES, PATIENTS & VISITO	ORS
	105
10.3.4. ADDITIONAL CONSIDERATIONS AND SURROUNDING	
Parking Areas	105
10.4 STRATEGIES TO IMPROVE INFRASTRUCTURE AT KEY	
Intersections	108
10.4.1. KING STREET & COUNTRY CLUB DRIVE	108
10.4.2. KING STREET & PORTSMOUTH AVENUE	110
10.4.3. KING STREET, UNION STREET & MOWAT AVENUE	112

In the period of time that the team spent researching AST in the context of travel to and from Providence Care Hospital, it became clear that there were three key challenges that this strategy needed to address specifically. By using the term 'challenge', we do not mean to imply that these issues are exceedingly difficult to solve, only that they require comprehensive strategies and the consideration of multiple stakeholders. Each challenge requires more detailed analysis that was beyond the scope of this report, but the strategies presented here provide a strong foundation to address these three issues. Discussion of these challenges follows on the next page.

### 10.1 REVIEW OF KEY CHALLENGES

Our research identified three key challenges that need to be addressed in order to effectively encourage the use of AST to Providence Care Hospital. A comprehensive set of recommendations are presented in this chapter to overcome each challenge. The three challenges, as discussed in detail in Chapter 4, are:

- Distance from hospital entrance to transit service. The pathway that will connect Providence Care Hospital to the nearest transit stop on King Sis 740 meters long. This distance is inconvenient, especially for those facing mobility challenges.
- Implications of introducing paid parking. The future paid parking system at the hospital presents an opportunity to promote AST. However, Providence Care needs to consider surrounding land uses and fair pricing when planning this system.
- 3. Required intersection improvements along King Street. King Street is the main commuter route for people to access the KPC. Three intersections along King Street have been identified as hazardous for pedestrians and cyclists: Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue.

# 10.2 STRATEGIES TO ADDRESS THE DISTANCE FROM HOSPITAL ENTRANCE TO TRANSIT SERVICE

A conveniently connected site, offering direct pathways for walkers, public transit riders and cyclists, would facilitate the use of active and sustainable modes of travel for employees, visitors, and patients of Providence Care Hospital. In the majority of cases, pedestrians (including walkers and transit riders) will access the hospital via a pathway that connects the facility to King Street. This pathway connects the future facility to numerous transit routes; therefore this pathway should be made a priority when implementing the variety of walking recommendations outlined in Chapter 6 of this report.

### 10.2.1. Provide a Shuttle Service

A key consideration and challenge of this AST strategy concerns the poor connectivity to transit for persons with mobility challenges. This challenge can be addressed by considering the feasibility of providing a drop-off service directly to the future Providence Care Hospital front door for employees, visitors, and patients. Providence Care should investigate providing a shuttle service to nearby transit stop locations along King Street and/or at St. Lawrence College during peak hours. This recommendation is supported by the Ontario Ministry of Transportation's (2011) Transit-Supportive Guidelines, which encourages employers to provide shuttles between the workplace and transit stations, such as those provided by the University Health Network in Toronto from the GO commuter rail and Union Station<sup>1</sup> (see



**Figure 10.1:** UHN shuttle service in Toronto (University Health Network, 2014).

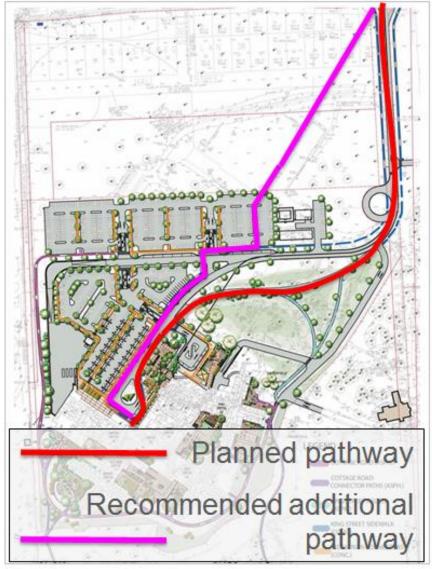
Figure 10.1). Similarly, at BP new bus lines were introduced to serve the upgraded site and a free shuttle service was also introduced to transport employees to the closest railway station at peak hours.

Ideally, the shuttle service would run during peak commuting times and more frequently during the colder months of the year. This would facilitate access to public transit when it is needed most, while simultaneously keeping service costs low. The shuttle would align with the existing transit schedule and have drop-off locations at the closest and most heavily frequented transit stops. At this point in time it is unclear if it is feasible to provide a shuttle service for patients, visitors, and employees of Providence Care Hospital, or just for employees. Therefore, Providence Care should develop a task force to perform an immediate feasibility analysis and determine the social, operational, and economic benefits and risks of a shuttle service. According to a representative of Providence Care, funding for this service must be derived from either external grants or on-site revenue surplus 2. Kingston Transit representatives also highlighted that financial support was currently not within their existing financial capacity<sup>3</sup>. In light of these financial limitations, implementing a pilot project featuring a volunteer-driven shuttle service may be an option for Providence Care. This would reduce labour costs and allow the organization to analyze the potential of the project without a high level of financial risk.

# 10.2.2. Shorten the Pedestrian Route from the Hospital Entrance to King Street

To reduce the time it takes to walk from the front entrance of Providence Care Hospital to the nearest transit stop, the planned pathway should be rerouted or a more direct, additional pathway should be added. The currently planned pathway (see Figure 10.2) meanders for 700 m from the express transit stop on King Street to the future hospital, adding approximately 100 m more to the journey than a straight pathway would. Although the curved pedestrian pathway around the parking lot and through green space is desirable for

pedestrians walking for recreational purposes, this design adds an unnecessary distance for pedestrians and transit users



**Figure 10.2:** A map of the planned pathway leading from the hospital entrance to the nearest transit service (pedestrian connection to King Street highlighted in red; recommended additional pathway in purple) (Adapted from Providence Care, 2014).

commuting to the hospital. The length of this pathway also poses a challenge for individuals with mobility impairments. Rerouting this pathway so that it connects more directly from King Street to the hospital entrance would ultimately encourage more people to choose walking and riding public transit as viable commuter options.

Evidence suggests that when pedestrians are presented with a meandering path, they will ultimately take the shortest route, and in the process create a direct, foot-worn path, often across grass. Existing foot-worn pathways near Providence Care facilities include a trail that links the east side of the KPC with the nearby Tim Horton's restaurant, as well as a trail at the north end of the parking lot at St. Mary's of the Lake Hospital. A similar trail is likely to develop from the hospital to King Street if an additional pathway is not added. The recommended pathway (see Figure 10.2) makes use of planned pathways and crosswalks through the parking lot before connecting directly to the transit stop. This route would reduce the 700 m trip to approximately 585 m. For the average person, this would reduce the time for the trip from eight and a half minutes to seven minutes. Although this time reduction may appear insignificant, assuming 250 working days in a year, this pathway would save a commuter 15 minutes every week, or 12.5 hours every year, if they used the shorter route every day.

The proposed shortened pathway would cross two blocks of the KPC that are proposed for subdivision. In considering the addition of this pathway, Providence Care should consult Infrastructure Ontario concerning the time frame for future development. IO would also need to be a collaborator in the implementation of the pathway, if it is determined that it will provide sufficient benefit before future development takes place. Conversely, as future development occurs, consideration should be given to hospital users. The proposed additional

pathway will likely be built over and the planned pathway along the vehicle entrance will also be affected. However, with consideration given to Providence Care Hospital and its users, the impact on the planned pathway can be positive. Additional buildings and features can provide protection for users and make the trip more enjoyable.

### 10.2.3. Enhance the Planned Pathway

In addition to potentially shortening the pathway distance between the hospital and King Street, a number of elements can enhance the walking journey for pedestrians. These elements are discussed in detail in Chapters 5 and 6, and include:

- Installing pedestrian wayfinding markers for navigational purposes, which is particularly useful for first time hospital visitors and patients, as well as interpretive signage that adds to the interest of the route
- Adding adequate lighting so people feel safe using the long pathway, and so that potential tripping hazards are illuminated
- Widening the sidewalk so that multiple users, particularly those with mobility aids or strollers, may navigate it easily
- Installing benches so that individuals may rest along the distance; this is particularly important for those with mobility challenges.
- Planting landscaping like trees and shrubs that aesthetically enhance the route, while also providing cover from the elements
- Ensure that snow and ice clearance is completed often and thoroughly

Collaboration will be required between Providence Care and Infrastructure Ontario to implement improvements to the route within the hospital block and along the road connecting it to King Street at Portsmouth Avenue. These are short-term recommendations and can be implemented in the next five years, with the exception of sidewalk widening which may require a longer timeframe to be implemented.

### 10.2.4. Install Heated Sidewalks

As discussed in Chapter 6, installing heated sidewalks is preferable to providing snow clearance because they ensure that sidewalks are always free of snow and ice. Safety concerns regarding slipping on ice were commonly held by our research participants, and these concerns deter people from walking in otherwise amenable conditions. Installing a heating system below the planned or additional sidewalk from the hospital entrance to King Street would ensure an ice- and snow-free journey. With the construction of the future hospital and new pathway network, there is the opportunity to install a heated walkway system. Providence Care should engage IO and future tenants of the adjacent, proposed blocks to explore the potential for collaboration to implement heated sidewalks. Priorities for implementation should be the hospital entrance and key connecting pathways such as with the patient and visitor parking and the transit stop at King Street and Portsmouth Avenue.

### 10.2.5. Provide Real-Time Transit Information

Providing accurate, real-time transit information would allow transit users to plan their journey to the bus stop from the hospital with greater certainty. As outlined in Chapter 8, this type of system allows individuals to minimize the time they spend outside waiting in inclement weather conditions. Real-time information transit information should be provided in a number of ways: phone apps, the Kingston Transit website, and through a passenger information board installed in the lobby of the hospital.

### 10.2.6. Provide a Heated Transit Shelter

The transit shelter at the corner of King Street and Portsmouth Avenue is sheltered from the elements but it is not heated. Even with protection from wind and snow, waiting a long time for a bus in cold winter conditions can be guite uncomfortable, particularly after a long walk to the shelter. A user-activated heating system should be installed at this location, in line with our previous recommendation for Kingston Transit to consider installing user-activated heating systems at prioritized stop locations, including transfer points and remote locations. User-activated heating systems have been integrated in several Canadian cities, as they help to improve safety during comfort and colder user months. Implementing a heating system pilot program at several major bus stops would allow Kingston Transit to assess the demand and economic feasibility of these upgrades.

### 10.3 A COMPREHENSIVE PARKING STRATEGY

Given that Providence Care will implement a paid parking system for the future facility, it is necessary to establish a fair parking strategy that integrates considerations of convenience, pricing, surrounding land uses, and future development of the KPC lands. This strategy must balance stakeholder needs and economic feasibility, but should also be framed to promote AST to and from the site. As such, this parking strategy should consider Providence Care Hospital employees, patients, and visitors, as well as St. Lawrence College professionals and students, Ministry of Ontario employees, Lake Ontario Park users, and community residents. A number of Providence Care employees are required to travel to and from various Providence Care facilities daily, and so a parking strategy will also need to adopted at all facilities, not just the hospital<sup>4</sup>.

# **10.3.1. Provide Flexible Parking Passes for Providence Care Employees**

Providence Care should implement a flexible parking pass program and avoid providing annual or monthly parking passes. Flexible parking is a type of parking system where payment is based on the number of times the pass is used rather than based on use within a certain time frame (e.g. monthly parking pass). When employees are not locked into a monthly parking pass, there is an economic incentive for employees to integrate AST into their commutes without the burden of having to pay for parking that is not being used. This type of policy would allow individuals to have more flexibility in travel options to the site. According to the Victoria Transport Policy Institute, offering parking cash-outs to AST users can reduce single-occupant vehicle trips by 10 to 30%, depending on the value of the discount<sup>5</sup>.

Given that Providence Care will implement electronic paid parking passes for its employees at the future facility, there is an opportunity to capitalize on this system for flexible parking. Staff will scan their passes in order to enter and use the gated parking area. Providence Care should invest in an electronic system that monitors the number of times an employee accesses the designated parking lot relative to the total number of monthly workdays. Employees registered in the flexible parking program would only be charged for the number of days they park in the lot, instead of paying for a full monthly parking pass. This would provide the baseline flexible parking rate.

### 10.3.2 Lease Excess Parking Space

Given that there may be an excess of parking spaces for employees, particularly as rates of AST increase, there is an opportunity to include a leasing arrangement in the new proposed parking strategy. For instance, this might involve leasing several spaces to St. Lawrence College students and professionals or Ministry of Ontario employees. As development on the KPC lands progresses, this leasing strategy could be expanded to include local residents and commercial business owners. Leasing excess parking spaces capitalizes on the unused resource of parking spaces and provides a financial benefit in promoting AST as an additional revenue stream for the hospital.

A successful example of this strategy consists of the Short Street Project in Saanich, British Columbia. This mixed use development project implemented underground parking for residents of the 72 condominium units and commercial surface spaces for the three on site businesses<sup>6</sup>. After regular business hours, the commercial surface spaces were made available for use by residents. Providence Care could use a similar strategy by charging for excess spaces.

The opportunity to lease excess parking spaces must be considered several months after Providence Care Hospital is built to determine how the daily number of employee-occupied spaces fluctuates over the course of a year. Using this analysis, the number of leasable lots could be estimated. The parking rate for leased spaces should be set above that of hospital employee rates. This will capitalize on parking demand and augment the financial benefits of promoting AST to staff, ultimately maximizing the revenue stream from the parking lot. This could be a way for the hospital to generate additional revenue for parking lot maintenance while also investing in AST programs and infrastructure, such as subsidizing the Kingston Transpass.

# 10.3.3 Parking Rates for Employees, Patients & Visitors

With separate parking lots for employees, and patients/visitors, separate pricing strategies for each lot are described below.

### **Employees of Providence Care**

City staff have emphasized that Providence Care must introduce its staff parking at a rate that is high enough to act as an economic disincentive for the single occupant commute<sup>3</sup>. Providence Care representatives have also confirmed that onsite parking rates will exceed the cost at surrounding institutions, such as St. Mary's Hospital and St. Lawrence College2,7. In examining pricing at surrounding institutions (see **Table 10.1** on the next page) the average parking permit rate is \$83 per month. At other hospital facilities (Kingston General Hospital and Hotel Dieu) the average rate for full-time staff is \$98.50 per month. Although setting a monthly rate for employee parking at Providence Care Hospital will require a more in-depth economic analysis by the parking task force, as well as coordination with other Providence Care sites, it is recommended that Providence Care Hospital's employee parking rate meet or exceed the average value of \$83 per month to remain competitive in the market. The parking rate should also exceed the value of a Kingston Employee Transpass, in order to provide employees with a financial incentive to take public transit. To support the implementation of a flexible parking pass employees should be charged a daily. pro-rated equivalent of the monthly fee.

### **Patients and Visitors**

Balancing hospital revenue needs with patient-centred health care is something that a parking task force will have to carefully weigh, but this strategy discourages Providence Care from charging market rate parking at the future hospital for patients and visitors. Currently, the average visitor parking rate for surrounding institutions is \$9 per day (refer to **Table 10.2**).

In addition to daily rates, Providence Care should consider offering discounted rates to long-term patients and visitors. For instance, St. Mary's of the Lake Hospital currently leases spaces to Queen's University and KGH professionals for a monthly rate of \$75, while patients and visitors who frequent the hospital on a weekly basis can park in the designated lot for a monthly rate of \$41 (see **Table 10.2** on the next page). This approach would provide the hospital with a greater revenue stream for parking.

To discourage visitors at other institutions from taking advantage of cheaper visitor parking at the Providence Care Hospital, a plate registration system would have to be put into effect. This would mean visitors and patients would sign in their vehicle plate at the hospital front desk to avoid receiving a parking ticket.

# **10.3.4. Additional Considerations and Surrounding Parking Areas**

Parking policies in the surrounding areas must be collaboratively addressed to prevent Providence Care employees from avoiding on-site parking fees by parking at nearby facilities that are less expensive or free. Stakeholders will include the Provincial Ministry offices, St. Lawrence College, Lake Ontario Park, surrounding residential areas, and future development on the site. These concerns are addressed in the sub-sections below.

### **Ministry of Ontario Offices**

Parking strategies for the Ministry of Ontario offices will be managed by Infrastructure Ontario. Currently, parking is free for all employees of these offices. However, as development of the future hospital progresses, it is recommended that a permit

### 10 - STRATEGIES TO ADDRESS KEY CHALLENGES

**Table 10.1:** Summary of maximum monthly parking rates for employees at surrounding institutions. All figures reported in this table are rounded to the nearest dollar. These figures are derived from interviews with City of Kingston planners, St. Lawrence College and Providence Care representatives, and from reported values on the Queen's University website.

	St. Mary's of the Lake	Hotel Dieu	Kingston	St. Lawrence	St. Lawrence Queen's	Jniversity	Average
	Hospital	Hospital	General Hospital	College	Main Campus	West Campus	Rate
Monthly rate: full-time staff	\$53	\$93	\$104	\$42	\$123	\$82	\$83
Monthly rate: part-time staff		N/A	\$26 <sup>1</sup>	N/A	N/A	N/A	\$30
	<sup>1</sup> This monthly permit is aimed at staff who park in the lot on evenings and weekends, and is not necessarily specific to part-time staff.						

**Table 10.2:** Summary of maximum daily and monthly parking rates for patients and visitors at surrounding institutions. All figures reported in this table are maximum values derived from interviews with City of Kingston planners, St. Lawrence College, and Providence Care representatives, and from reported values on the Queen's University website.

	St. Mary's of Hotel Dieu		Kingston	St. Lawrence College	Queen's University	
	the Lake Hospital	Hospital General Hospital	Main Campus		West Campus	
Daily parking rate	\$6 <sup>1</sup>	\$8	\$16 <sup>2</sup>	\$6	N/A³	\$6
Monthly parking rate	\$41 <sup>4</sup> or \$75 <sup>5</sup>	N/A	N/A	\$42	\$1,23 <sup>6</sup>	\$82 <sup>6</sup>

<sup>&</sup>lt;sup>1</sup>Maximum daily parking rate. Parking is \$2/hour, and \$4/day passes are sold in the front lobby of the hospital.

<sup>&</sup>lt;sup>2</sup>Maximum daily parking rate. The timed rate for daily parking is \$1.25/half-hour. The overnight parking rate is set at \$6.00 per night.

<sup>&</sup>lt;sup>3</sup>Queen's University does not have daily rates for parking on the main campus. Parking is charged at \$1.25 per half hour.

<sup>&</sup>lt;sup>4</sup>Monthly permit rate specific to visitors such as continuing care patients, etc.

 $<sup>^{5}\</sup>mbox{Monthly permit rate for Queen's and KGH professionals only.}$ 

<sup>&</sup>lt;sup>6</sup>Queen's University does not differentiate between visitors and staff. Thus, the values listed are general maximum rates for lots on the Main and West campuses.

display system be implemented at these lots to prevent hospital employees, patients, and visitors from using these designated parking spaces.

### St. Lawrence College

As shown in **Table 10.1**, St. Lawrence College rates are significantly lower, in fact sometimes more than half that, of what other institutions charge. The introduction of paid parking at Providence Care Hospital might encourage employees to park at St. Lawrence College, thereby compromising the College's parking availability for its own staff and students. In light of this, it is recommended that St. Lawrence College consider increasing its permit parking rates in line with surrounding institutions.

### **Lake Ontario Park**

At present, City of Kingston representatives have revealed that there are no plans to implement paid parking at Lake Ontario Park<sup>8</sup>. Additional signage, monitoring, and enforcement will be used to ensure that the parking spaces are reserved for park users only.

However, the introduction of paid parking at Providence Care Hospital, in addition to an increased parking demand on the KPC lands as development progresses, might compromise the availability of free parking at Lake Ontario Park for park users. To address this potential problem, a strategy could involve implementing a "First Two Hours Free Parking" policy. After two hours, park users would be required to pay for parking at the hourly or daily rate determined by the City of Kingston. The City could consider the success of the "First Hour Free Program" in Victoria, BC, which was implemented in all municipally owned parkades<sup>9</sup>.

Implementation of a "First Two Hours Free Parking" policy would require that parking lot users at Lake Ontario Park print time-stamped tickets which must be displayed on their vehicle dashboards. Alternatively, a "pay-by-plate" system may also be used by requiring park users to input their license plate numbers into a payment machine. This electronic system would be programmed such that a maximum of two hours of free parking could be printed for each plate. Beyond this time, users would be required to pay for parking or be subject to City parking fines. This would prevent Providence Care Hospital employees from taking advantage of the availability of free parking at Lake Ontario Park.

### **Residential Zones**

The implementation of paid parking at the hospital will likely cause some hospital employees, patients, and visitors to park on nearby residential streets to avoid paying parking fees. Parking is currently free on residential streets in Portsmouth Village. Although parking on these streets would actually increase the use of AST for drivers, as they would need to walk to the hospital, the decision to use AST in this context would be more to avoid paying parking fees, than to engage in AST for its noted benefits. However, according to City of Kingston planners, on-street parking restrictions will be implemented in residential zones surrounding the future facility to limit day parking and to encourage daily parking turnover<sup>10</sup>.

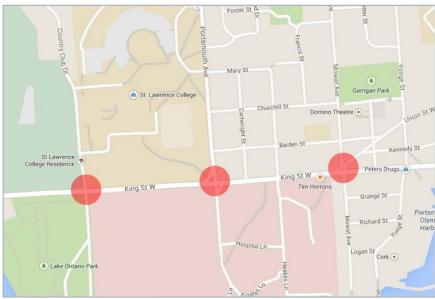
Implementing limited time free parking, such as the "First Two Hours Free Parking" policy, can encourage parking turnover. Alternatively, implementing a permit only system may restrict parking to just residents of the area. The permit system could also be introduced for people to purchase on a monthly basis.

## Future Residential and Commercial Development of the KPC Lands

As development of the KPC lands progresses, Providence Care Hospital has the opportunity to capitalize on any extra, unused parking spaces on site. As mentioned earlier, the organization could lease a number of parking spaces for future KPC residents and commercial business customers on an afterhours basis. Ultimately, the City should coordinate with Providence Care to implement parking strategies as future development occurs.

# **10.4 S**TRATEGIES TO IMPROVE INFRASTRUCTURE AT KEY INTERSECTIONS

In order to provide informed recommendations for key intersection improvements, portions of the Ontario Traffic Manual relevant to pedestrian and cycling infrastructure were consulted. This resource, produced by the Ontario Traffic Council (OTC), features infrastructure designs that are approved for use by the Ontario Ministry of Transportation. Insights from primary research guided the following recommendations, which are meant to address challenges specific to intersections near the hospital. The three intersections addressed here all run along King Street: Country Club Drive, Portsmouth Avenue, and Mowat Avenue and Union Street (see Figure 10.3). All three intersections were identified as needing improvement by workshop and interview participants. Implementing these recommendations will not only make the use of AST safer, but will improve motorist experience by reducing inconvenient or dangerous interaction with AST users. Illustrations of the intersections, both in their current condition and after improvements, are presented. These illustrations are outlined in red and green, respectively.



**Figure 10.3:** Problematic intersections, highlighted in red, near the site of the new hospital (from left to right): Country Club Drive, Portsmouth Avenue, and Union Street and Mowat Avenue. The KPC is located south of King Street, and is shown in pink on the map (Adapted from Google Maps, 2014).

### 10.4.1. King Street & Country Club Drive

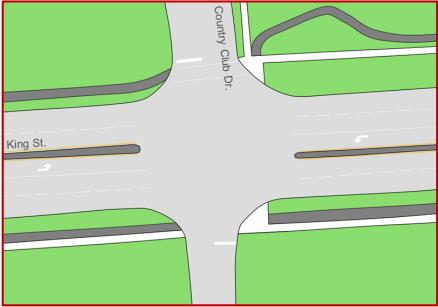
The four-way intersection at King Street and Country Club Drive provides access to popular Lake Ontario Park, which is located south of King Street. This intersection lacks traffic signals, but features stop signs for north- and south-bound traffic, with King Street traffic unimpeded. Excessive vehicle speeds and the lack of a controlled crossing indicate a significant risk to active transportation users who may attempt to cross this section of King Street. Additionally, a low level of service for automobiles results in significant delays for motorists, according to City of Kingston data from 2008<sup>11</sup>.

Sidewalks are present on both sides of King Street and the east side of Country Club Drive. However, no assistance is provided for active transportation users trying to cross King Street, besides a vague warning sign for motorists (see **Figure 10.4**).



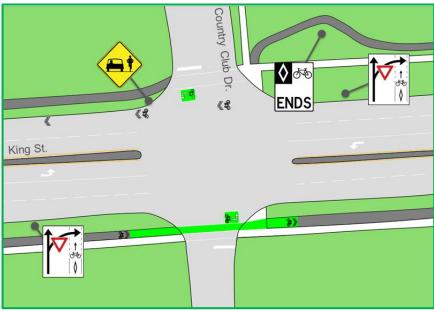
**Figure 10.4:** A photograph, facing west on King Street, shows an orange sign indicating that pedestrians may be trying to cross at the upcoming intersection (Newton, 2014).

The intersection, in its current condition, is illustrated in **Figure 10.5**. A crossing is outlined with paint on the north side of King Street, but not on the other three sides of the intersection. No indication is given to drivers that cyclists may be present.



**Figure 10.5:** An illustration of the intersection of King Street and Country Club Drive, in its current condition. Sidewalks are shown in white, and the off-road bike path is shown in grey. The intersection does not have traffic signals.

Similar to the intersection at Portsmouth Avenue, additional paint treatments and signage would improve motorist awareness of pedestrians and cyclists crossing parallel to King Street (see **Figure 10.6**). These improvements would also increase the perceived safety of active transportation users. Recommended paint treatments should include two-stage left turn queue bike boxes, and adding a pedestrian crossing on Country Club Drive, on the south side of King Street. Additionally, signs should be posted on the north side of King Street to indicate that the cycling lane is ending and sharrows and shared-lane signs should be introduced west of the intersection (see **Figure 10.6**). This would address potential conflict between cyclists and pedestrians on the ambiguous path that begins on the northwest corner of the intersection.



**Figure 10.6:** An illustration of improvements, drawn from the Ontario Traffic Manual, which could be made to the intersection. Bike boxes and bike lanes are shown in green. Yield signs indicate that motorists need to watch for cyclists crossing Country Club Drive.

### 10 - STRATEGIES TO ADDRESS KEY CHALLENGES

These changes could be introduced immediately, have low associated costs, and would significantly improve the actual and perceived safety of pedestrians and cyclists travelling parallel to King Street at this intersection. However, addressing the safety and ease of pedestrians and cyclists crossing King Street is more complex, since these users do not have the right of way. Given the residential communities to the north and west of the intersection, the significant distance to the closest crosswalk, the excessive vehicle speeds at this point on King Street, and the access that the intersection could provide to Lake Ontario Park and the future hospital; a signalized intersection is justified in this location. The introduction of a signalized intersection was also supported by planning consultants in the Master Plan and Block Plan Transportation Assessment compiled for the Kingston Provincial Campus<sup>11</sup>. This modification would allow pedestrians and cyclists to traverse the intersection with greater safety and improve access by all modes to the park and future hospital. The level of service for automobiles would also be improved.

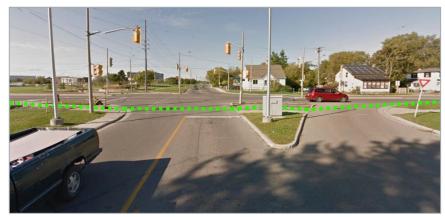
While introducing traffic signals at this intersection can be undertaken immediately, it will have a high associated cost. The City of Kingston Engineering Department should engage Infrastructure Ontario and Providence Care in addressing this upgrade as these parties will be affected by the timing of this upgrade with the future hospital and development pending.

# Summary of intersection improvements recommended at King Street and Country Club Drive:

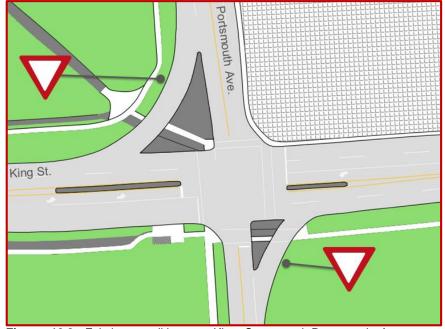
- Two-stage left turn queue boxes for King Street cyclists
- Paint treatment to draw attention to cyclists in off-road lane
- Signs for right-turning motorists to yield to cyclists
- Sign for westbound cyclists to indicate that off-road cycling lane will end at Country Club Drive
- Sharrows and shared-lane signs to indicate appropriate route for cyclists where lane ends
- Implement a signalized intersection to improve access to Lake Ontario Park and improve safety of all users

### 10.4.2. King Street & Portsmouth Avenue

Implementing recommendations targeted towards intersection is key for the success of this strategy, as this intersection provides access to Mental Health Services, and will continue to do so for Providence Care Hospital. Currently, the intersection at King Street and Portsmouth Avenue presents several challenges for users of all transportation modes. Of particular significance are the termination of the southbound bike lane on Portsmouth Avenue with no indication to drivers or cyclists of bike routes through the intersection (refer back to Figure 4.14 and see Figure 10.7), the lack of indication to drivers turning at the intersection of the potential for conflict with pedestrian and cycle traffic, and the lack of direction given to cyclists on King Street in either direction to safely make a left turn. Additionally, little indication is given to motorists to beware of pedestrians and cyclists crossing the right turn channels, where motorists are required to yield, in this case. The existing conditions for the site are illustrated in Figure 10.8.

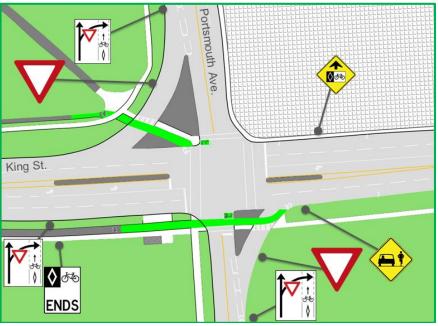


**Figure 10.7:** A photograph, facing north to King Street, demonstrates the lack of indication of the separated bike lane that crosses the intersection before merging with traffic (path shown here with a dotted green line) (Adapted from Google Maps, 2014).



**Figure 10.8:** Existing conditions at King Street and Portsmouth Avenue, a signalized intersection identified by interview and workshop participants as requiring significant improvement. Sidewalks are shown in white, and the off-road bike path is shown in grey. A transit shelter is located in the southwest corner of the intersection, where the off-road bike path ends.

In order to improve awareness of drivers, cyclists, and pedestrians of the conflict areas present at the intersection, paint treatments and signs should be used to indicate the paths which pedestrians and cyclists should take (see **Figure 10.9**).



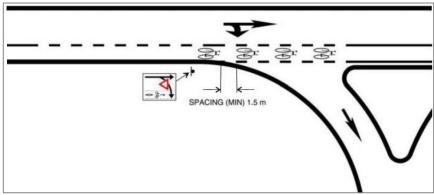
**Figure 10.9:** An illustration of the modifications that could be made to the intersections of King Street and Portsmouth Avenue to support cyclist and pedestrian activity.

Green paint treatment should be applied across the south side of the intersection to indicate to all users where cyclists should cross. The continuation of the bike lane on the south side of King Street also requires the transit stop and sidewalk layout to be slightly reconfigured. Ladder crosswalks should be painted in the right-turn channels to draw more attention to pedestrians in these areas. In this case, since yield signs are displayed to vehicles using the right-turn channels, the Ontario Traffic Council (OTC) states that such a paint treatment would be appropriate<sup>12</sup>. These improvements would give pedestrians and cyclists the right of way as they cross the right-turn channels. A

sign should also be posted on the south side of King Street indicating to motorists approaching the intersection the need to look for, and yield to, cyclists before completing a turn (see **Figure 10.9**).

Two-stage left turn queue boxes (a form of bike box, described in Section 7.2 of this report) should be painted adjacent to the path of cyclists crossing Portsmouth Avenue (also shown in **Figure 10.9**). Bike boxes are a lower priority for cyclists on Portsmouth Avenue, since vehicle speeds and volume are both less. However, these could be considered in the future, particularly if lanes are added to Portsmouth at a later time.

An additional conflict zone exists around the right-turn channels entering King Street where guidance is not given for cyclists who are proceeding to the intersection. Stencils, a dashed line, or a combination of the two should be used to demonstrate to cyclists and drivers the path that cyclists should take. Additionally, a sign can be posted to warn drivers to yield to cyclists before entering the right-turn channel. An example of how paint and signage can address such a conflict at right-turn channels is shown in **Figure 10.10**, in addition to being featured with other improvements in **Figure 10.9**.



**Figure 10.10:** An example of how signs and paint treatments can improve conflict zones at right-turn channels (OTC, 2013).

Finally, sharrows and shared-road signs should be introduced for cyclists travelling in both direction on King Street to the east of Portsmouth Avenue. This addition will extend the cycling infrastructure through Portsmouth Village to provide connectivity with the existing lanes east of Yonge Street.

# **Summary of intersection improvements recommended at King Street and Portsmouth Avenue:**

- Two-stage left turn queue boxes for King Street cyclists
- Extension of transit stop and reconfiguration of sidewalk and shelter to remove impediment to cyclists
- Paint treatment to draw attention to cyclists in separated lane
- Sign for cyclists to indicate dedicated lane ending
- Signs for right-turning motorists to yield to cyclists
- Sharrows and dashed cycling lane to indicate route for north- and southbound cyclists near right-turn channels
- Ladder crossings in right-turn channels to draw more attention to pedestrians
- Sharrows and shared-lane sign to continue cycling

### 10.4.3. King Street, Union Street & Mowat Avenue

The intersection of King Street with Union Street and Mowat Avenue presents unique challenges. Traffic from five directions converges at this point where the width of each right-of-way is constrained by property boundaries. This intersection features pedestrian crossing signals which require manual activation, unlike the many automated pedestrian signals in downtown Kingston. As a result of this inconsistency, pedestrians often execute illegal and dangerous crossings because they did not activate the signal (see **Figure 10.11**).



**Figure 10.11:** A pedestrian crossing King Street on a "no crossing" symbol (O'Neill-Kizoff, 2014).

An additional risk is posed to pedestrians in attempting to cross Union Street to and from the traffic island. This is the only pedestrian access to Union Street and to the north side of King Street but vehicles are not required to yield to pedestrians. There is also no direction given to cyclists and motorists on how to share the lanes, despite the narrow right-of-way. The current condition of the intersection is illustrated in **Figure 10.12**.



Figure 10.12: An illustration of the current condition of the intersection of King Street with Mowat Avenue and Union Street. Sidewalks are shown in white, and the pedestrian island in the middle of the intersection is shown in dark grey. A popular fast food restaurant is located near the southwest corner of the intersection.

A significant reconstruction including a widening of the right-of-ways may be necessary to fully address the issues present. However, some improvements can be made easily and in the short-term (see **Figure 10.13**). Firstly, the Union Street stop sign should be moved back to allow pedestrians safe crossing to and from the traffic island. A yield sign should then be added for traffic merging with King Street. This modification will also require a slight reconfiguration of the sidewalk on the traffic island to align with the new crosswalk. To further improve pedestrian safety, pedestrian signals at the intersection should be automated to be consistent with the majority of intersections in the downtown area. Finally, sharrows and shared-lane signs should be added to indicate to cyclists and motorists to proceed single-file through this section of King Street. This addition will

provide connectivity between the existing cycling lanes west of Portsmouth Avenue and east of Yonge Street.



**Figure 10.13:** An illustration of the recommended improvements to the intersection of King Street with Union Street and Mowat Avenue.

A widening of the right-of-ways and additional reconfiguration will likely be required in order to provide an adequate level of service for pedestrians and cyclists. The City of Kingston Engineering Department should give particular consideration to the perspectives of Infrastructure Ontario and residents and business owners of Portsmouth Village - along with nearby institutions and commuters who use the intersection - in this project. In the meantime, less confident cyclists may want to avoid this intersection, and use the Waterfront Trail or Johnson Street to travel west to the hospital. As discussed in Chapter 5, an AST travel section on the hospital website could highlight these alternate travel routes.

# **Summary of intersection improvements recommended at King Street, Union Street and Mowat Avenue:**

- Reposition of stop sign and addition of yield sign to provide for a safe pedestrian crossing on Union St.
- Modification of pedestrian signals from manual to automatic
- Single-file lane signs and sharrows to connect existing lanes to the west and east of Portsmouth Village

Ontario Ministry of Transportation. (2011). Transit-supportive guidelines: Location and design of transit stops. Retrieved November 15, 2014 from http://www.mto.gov.on.ca/english/transit/supportivequideline/enhancing-access-transit.shtml

<sup>&</sup>lt;sup>2</sup> Providence Care representative, personal interview, November 3, 2014.

<sup>&</sup>lt;sup>3</sup> City of Kingston representatives, personal interview, October 7, 2014.

<sup>&</sup>lt;sup>4</sup> Providence Care representative, telephone interview, November 12, 2014.

<sup>&</sup>lt;sup>5</sup> Litman, T. (2014). Parking management: Comprehensive implementation guide. Victoria, BC: Victoria Transport Policy Insitute.

<sup>&</sup>lt;sup>6</sup> Canada Mortgage and Housing Corporation. (2014). *Transit-oriented development - case studies*. Retrieved November 17, 2014 from http://www.cmhc-schl.gc.ca/en/inpr/su/sucopl/upload/65510EnW.pdf

<sup>&</sup>lt;sup>7</sup> Providence Care representative, personal Interview, October 14, 2014.

<sup>&</sup>lt;sup>8</sup> City of Kingston representative, personal interview, October 17, 2014.

<sup>&</sup>lt;sup>9</sup> City of Victoria. (2012). Engineering and Public Works - parking. Retrieved November 17, 2014 http://www.victoria.ca/EN/main/departments/engineering/parking.html

<sup>&</sup>lt;sup>10</sup> City of Kingston representatives, personal interview, October 7, 2014.

<sup>&</sup>lt;sup>11</sup> Ontario Realty Corporation (2011). Kingston Provincial Campus: Master Plan and Block Plan transportation assessment.

<sup>&</sup>lt;sup>12</sup> Ontario Traffic Council (2010). Ontario Traffic Manual, Book 15: Pedestrian crossing facilities. Retrieved November 15 from http://www.otc.org/research/download-manuals/

# 111 STRATEGY IMPLEMENTATION

11.1 TIMELINE FOR STRATEGY IMPLEMENTATION	115
11.2 STAKEHOLDERS	120
11.3 FINAL COMMENTS AND CONCLUSION	120

This chapter outlines a brief implementation strategy for the recommendations described in Chapters 5 through 10. A timeline is presented that categorizes each recommendation, and a discussion of stakeholders is conducted, although it is not exhaustive.

### 11.1. TIMELINE FOR STRATEGY IMPLEMENTATION

The following tables provide a brief overview of all the recommendations presented in this report for each of the different modes of active and sustainable travel. Furthermore, each recommendation has been grouped into one of three categories with respect to the timeframe which has been predicted for the recommendation's implementation. Of course, more complex, long-term recommendations could be broken down into shorter-term projects. The three categories are as follows:

Quick Win Recommendations: Recommendations which can be easily implemented in a timely manner and provide an almost immediate benefit at a low financial cost.

**Short-term Recommendations:** Recommendations to be implemented within the next five years.

Long-term Recommendations: Recommendations which may take over five years to be fully implemented.

### 11 -STRATEGY IMPLEMENTATION

**Table 11.1:** This table lists all of the general recommendations discussed in this report. Refer back to Chapter 5 for greater detail. Each recommendation has been numbered correspondingly to its given number in Chapter 5.

TIMEFRAME	GENERAL RECOMMENDATIONS	STAKEHOLDERS
	G-4: Provide a guaranteed ride home program	Providence Care
Quick Win	<b>G-8:</b> Maintain existing infrastructure to high standards by clearing snow and debris, and keeping sidewalk and cycling lane surfaces in good repair	Providence Care, Infrastructure Ontario, City of Kingston
	<b>G-1:</b> Allow employees to work flexible hours, as appropriate, dependent on position duties	Providence Care
	G-2 & G-6: Provide comprehensive AST information on the Providence Care website, as well as the City of Kingston website	Providence Care, City of Kingston
Object to the	G-3: Offer recognition, awards, and financial incentives to employees who use AST	Providence Care
Short-term	<b>G-5:</b> Develop sustainability objectives and policies to guide AST initiatives	Providence Care
	<b>G-7:</b> Improve wayfinding markers, particularly near and on the KPC, to make navigation easier while using AST	City of Kingston, Infrastructure Ontario
	G-9: Create a Transportation Management Association	City of Kingston, various employers and community associations, KFL&A Public Health

**Table 11.2:** This table highlights all of the walking recommendations detailed in this report. Refer back to Chapter 6 for greater detail. Each recommendation has been numbered correspondingly to its given number in Chapter 6.

TIMEFRAME	WALKING RECOMMENDATIONS	STAKEHOLDERS
	<b>W-1:</b> Create an Active Transportation Committee to promote walking to and from the workplace	Providence Care
Short-term	<b>W-2:</b> Prioritize snow and ice clearance on sidewalks near Providence Care hospital and other healthcare facilities.	City of Kingston
	W-6: Improve KPC walking paths with the addition of lighting, landscaping, benches, and other amenities	Infrastructure Ontario, Providence Care
	W-3: Widen sidewalks near the KPC	City of Kingston
Long torm	W-4: Improve existing pedestrian crossings and create more signalized pedestrian crossings along King Street.	City of Kingston
Long-term	W-5: Provide more courtesy crossings on streets with slower moving traffic near the KPC	City of Kingston
	W-7: Introduce heated sidewalks in prioritized areas	City of Kingston, Infrastructure Ontario, Providence Care

### 11 -STRATEGY IMPLEMENTATION

**Table 11.3:** This table highlights all of the cycling recommendations detailed in this report. Refer back to Chapter 7 for greater detail. Each recommendation has been numbered correspondingly to its given number in Chapter 7.

TIMEFRAME	CYCLING RECOMMENDATIONS	STAKEHOLDERS
Quick Win	<b>B-6:</b> Implement sharrows in key locations where bike infrastructure is lacking or constrained	City of Kingston
	<b>B-2:</b> Start a Bike-to-Work club to encourage employees to try cycling and help cyclists connect socially	Providence Care
Short-term	<b>B-3</b> : Implement a private bike share program to allow employees to run errands or bike for fun on their breaks and try commuting by bike at a low cost	Providence Care
	<b>B-1:</b> Enhance end-of-trip facilities by introducing change rooms, showers, lockers, and drying facilities for cyclists	Providence Care
Long-term	<b>B-4:</b> Install bike boxes at high traffic intersections to increase the safety of cyclists	City of Kingston
	B-5: Improve bike lane presence and connectivity around and within KPC	City of Kingston
	<b>B-7:</b> Introduce traffic calming measures on local streets to improve pedestrian and cyclist safety and divert traffic to arterial roads	City of Kingston

**Table 11.4:** This table highlights all of the transit recommendations detailed in this report. Refer back to Chapter 8 for greater detail. Each recommendation has been numbered correspondingly to its given number in Chapter 8.

TIMEFRAME	TRANSIT RECOMMENDATIONS	STAKEHOLDERS
	T-1: Offer Transpass program to Providence Care employees	Providence Care
Quick Win	<b>T-7:</b> Promote multimodal trip programs like Rack-and-Roll to employees and members of the public	Providence Care, Kingston Transit, KFL&A Public Health
	T-2: Upgrade existing stops with shelters, schedule information, and other amenities	Kingston Transit
Chart tarm	T-3: Install user-activated heating systems at priority bus shelters	Kingston Transit
Short-term	T-5: Enhance and promote Park-and-Ride facilities	Kingston Transit
	<b>T-6:</b> Provide real-time transit information through passenger information boards, and the Kingston Transit Trip Planner	Kingston Transit, Providence Care
Long-term	T-4: Install infrastructure, such as specific queue jumping lanes at intersections, and new technology to reduce transit delays and trip time	Kingston Transit
Long term	T-8: Develop well-connected transit linkages for pedestrians and cyclists	Kingston Transit, Infrastructure Ontario

**Table 11.5:** This table highlights all of the carpooling recommendations detailed in this report. Refer back to Chapter 9 for greater detail. Each recommendation has been numbered correspondingly to its given number in Chapter 9.

TIMEFRAME	CARPOOLING RECOMMENDATIONS	STAKEHOLDERS	
Short-term	C-1: Offer reduced parking charges for carpool parking spots	Providence Care	
	C-2: Provide designated, well-marked parking spaces for carpool drivers	Providence Care	
	C-3: Create and promote a carpool matching program (regional preferable to workplace-specific)	City of Kingston, Providence Care	

### 11.2. STAKEHOLDERS

Our strategy considers a breadth of stakeholders who all play a role in implementing a successful AST strategy. While travel to and from Providence Care Hospital is the focus of our strategy, Providence Care is limited to changing policies, programs, and infrastructure that support AST only at the hospital site. However, a comprehensive AST strategy must also consider surrounding land uses and users, including the Kingston Provincial Campus (KPC) and wider Kingston community; therefore, partnerships must be established to improve AST commuting options beyond just the site of the hospital itself.

Collaboration between Providence Care Hospital and Infrastructure Ontario (IO) would provide a strong foundation for developing the KPC into a pedestrian- and cycle-friendly site. Additionally, collaboration between Providence Care, IO, and the City of Kingston is necessary to create a community-wide transportation system that supports AST. Several City departments are integral to these partnerships, including Kingston Transit, Public Works, Planning & Development, Parks & Recreation, and Engineering.

Infrastructure improvements and policy changes, such as sidewalk clearance and maintenance, directly affect other

institutions and land uses in the area, including St. Lawrence College, Lake Ontario Park (LOP), Portsmouth community, and the Ministry of Ontario offices, and therefore any changes should be informed by their needs as well. Similarly, programs, such as carpool directories, would be strengthened by institutional partnerships.

Connecting with community stakeholders is critical for gathering widespread support, but even more importantly, it also means that changes will benefit as many people and groups as possible.

### 11.3. FINAL COMMENTS AND CONCLUSION

The goal of this active and sustainable transportation (AST) strategy is to improve conditions for using AST both to and from the new Providence Care Hospital and in the wider community, as well as to encourage employees, patients, and visitors of the new hospital to choose active and sustainable commuting modes. This strategy reflects input from a variety of stakeholders and was designed to address AST in a comprehensive manner.

The recommendations and implementation strategies presented in this strategy were guided by findings from

intensive research which outlined current barriers and facilitators that may promote or deter employees, patients, and visitors from using AST to and from the Providence Care Hospital. The barriers and facilitators outlined were scaled both at the hospital and KPC sites, as well as in the surrounding community and the City of Kingston as a whole. Research was conducted through policy and document analyses, academic research, case study analyses, interviews with planning professionals and community members, and through a community workshop. The case study analyses provided Canadian and international examples of AST best practices at both the employer and city levels, and was integral to finalizing the recommendations presented in this report.

Three key challenges, or major themes, for creating and implementing a successful AST strategy were extracted from the primary research findings and include key intersection improvements, a comprehensive parking strategy by Providence Care, and distance from the hospital front doors to the near transit stops. These considerations provide a foundation for the additional recommendations and implementation strategies we have outlined to encourage AST to and from the new Hospital.

Additional recommendations made in this report are either mode-specific, geared toward walking, cycling, transit, and carpooling, or are more general, in that they encompass some or all of the travel modes we define in this AST strategy. Additionally, recommendations encompass changes to policies, programs, and infrastructure and we direct efforts to either Providence Care Hospital, the City of Kingston, or specify that changes will need to be a collaborative effort. It was essential to include recommendations at the community level as the use of AST extends beyond the new hospital site, into the broader transportation system of the City. Providing recommendations

at a variety of levels, allows for aspects of this AST strategy to be modified and implemented at other large institutions in the surrounding area, such as St. Lawrence College and other Providence Care facilities.

The recommendations presented in this report vary in their costs, and therefore should be implemented at different times and in stages. A potential timeline for implementing these recommendations has been outlined in this AST strategy, where recommendations are categorized into "quick wins" or short- and long-term implementation. There are several recommendations that can be implemented relatively quickly with minimal cost; while many of the recommendations will require intensive planning and partnerships between stakeholders.

Moving forward with these recommendations will mean a significant collaboration between many stakeholders, such as Providence Care, KFL&A Public Health, and the City of Kingston. Additionally, including community residents and local organizations in the decision-making process is paramount to developing a healthy, efficient, and well-accepted AST network. Addressing the recommendations presented in this strategy will encourage employees, patients, and visitors of the new Providence Care Hospital to commute by active and sustainable modes, and will help to promote AST in the wider community.